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To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

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TREASURY RULINGS.

So much of the acts relating to life-saving stations and the Life-Saving Service approved June 20, 1874, June 18, 1878, and May 4, 1882, as provide for the award of life-saving medals shall be construed so as to empower the secretary of the treasury to bestow such medals upon persons making signal exertions in rescuing and succoring the shipwrecked and saving persons from drowning in the waters over which the United States has jurisdiction, whether the said persons making such exertions were or were not members of a life-saving crew, or whether or not such exertions were made in the vicinity of a life-saving station.

"Yachts, belonging to a regularly organized yacht club of any foreign nation which shall extend like privileges to the yachts of the United States, shall have the privilege of entering or leaving any port of the United States without entering or clearing at the custom-house thereof or paying tonnage tax: Provided, That the privileges of this section shall not extend to any yacht built outside of the United States and owned, chartered or used by a citizen of the United States, unless such ownership or charter was acquired prior to the passage of this act."

Section 11 of an act, entitled "An act to abolish certain fees for official services to American vessels, and to amend the laws relating to shipping commissioners, seamen and owners of vessels, and for other purposes," approved June 19, 1886, so far as the same exempts any yacht built outside of the United States, and owned, chartered or used by a citizen of the United States, from the payment of tonnage taxes, is hereby repealed.

"Sec. 4178. The name of every documented vessel of the United States shall be marked upon each bow and upon

the stern, and the home port shall also be marked upon the stern. These names shall be painted or gilded, or consist of cut or carved or cast roman letters in light colors on a dark ground, or in a dark color on a light ground, secured in place, and to be distinctly visible. The smallest letters used shall not be less in size than four inches. If any such vessel shall be found without these names being so marked the owner or owners shall be liable to a penalty of \$10 for each name omitted: Provided, however, that the names on each bow may be marked within the year 1897."

"Every master or other officer of an American vessel on the high seas or on any other waters within the admiralty and maritime jurisdiction of the United States, who, without justifiable cause, beats, wounds, or imprisons any of the crew of such vessel or withholds from them suitable food and nourishment, or inflicts upon them any cruel and unusual punishment, shall be punished by a fine of not more than \$1,000, or by imprisonment not more than five years, or by both." Nothing herein contained shall be construed to repeal or modify section 4611 of the Revised Statutes.

The secretary of the treasury shall assign in public buildings or otherwise suitable offices and rooms for the shipment and discharge of seamen, to be known as shipping commissioners' offices, and shall procure furniture, stationery, printing, and other requisites for the transaction of the business of such offices."

NEW TONNAGE.

The Bureau of Navigation, Treasury Department, Washington, D. C., issued official numbers during the week ending April 24, to the steamers Minneapolis, 2029 gross and 1222 net tons, built at South Chicago and hailing from Cleveland; Prodigy, 107 gross and 64 net tons, built at West Bay City and hailing from Port Huron; St. Paul, 2029 gross and 1222 net tons, built at South Chicago and hailing from Cleveland; schooner S. O. Co. No. 81, 1775 gross and 1402 net tons, built at and hailing from Buffalo.

For the week ending May 1, the steamers Industry, 107 gross tons, built at West Bay City, and hailing from Port Huron, and the Elma, of 30 tons, built at Buffalo are recorded; also the schooner Sydney G. Thomas, of 3200 gross and 2913 net tons, built at Cleveland and hailing from Duluth.

NAVAL RESERVE FUND.

The \$50,000 appropriation made by Congress for the Naval Militia has been divided by the Secretary of the Navy among the battalions of the various states according to the number of men enrolled, as follows: Massachusetts, 434 men, \$5,625; Rhode Island, 158 men, \$2,048; Connecticut, 135 men, \$1,749; New York, 367 men, \$4,757; New Jersey, 337 men, \$4,368; Pennsylvania, 183 men, \$2,372; Maryland, 233 men, \$3,020; South Carolina, 165 men, \$1,814; North Carolina, 140 men, \$2,138; Georgia, 188 men, \$2,436; Louisiana, 209 men, \$2,079; California, 255 men, \$4,601; Illinois, 448 men, \$5,807; Ohio, 174 men, \$2,255; Michigan, 177 men, \$2,294.

Senator Mason is urging the Treasury to raise the port of Chicago to the first class and to station a naval officer there to act with the collector in supervising customs. He claims its collections exceed those of Baltimore or New Orleans, and equal those of San Francisco. Chicago leads New York in number of vessels entering and clearing in a year. Chicago entered 9,263, cleared 9,424; New York entered 7,174, cleared 6,778; New York customs amount to \$108,000,000; Philadelphia, \$13,000,000; Boston, \$11,000,000; and San Francisco and Chicago, \$5,000,000 each.

TRANSPORTATION AND THE PACIFIC TRADE.

In a recent interview in Washington President James J. Hill, of the Great Northern railroad, who is interested in transportation enterprises in the Orient, stated a number of suggestive facts in regard to business in that section. In trying to establish an outlet for grain across the Pacific, President Hill tumbled over the difficulty which is spurring the friends of America's shipping industry to ask Congress for a measure of protection for our shipping. He found that we can build ships almost as cheaply as they can be built abroad, but we cannot run them as economically. The Sailors' Union fixed the wages of sailors at \$30 a month, and the wages of engineers and other ship employes at about twice the wages paid by European steamers. This, of course, made it impossible for Mr. Hill to run steamers under the American flag, and showed clearly why the American shipping industry needs protection.

When Japan's war with China came to an end, she devoted a large portion of her indemnity to subsidizing her shipping industry, which is now assisted, from President Hill's calculations, to an extent equal to the cost of a steamer's coal and the wages of her crew. Mr. Hill therefore contracted with the owners of Japanese ships to carry produce across the Pacific ocean, stipulating that flour should pay only \$3 a ton, as against \$7 and \$8 a ton formerly charged from West coast ports in the United States. In this way he shipped about 28,000,000 bushels of wheat, or its equivalent in flour, from the last crop. This shows that the trade across the Pacific ocean is destined to develop into great proportions.

The influence of this opening for produce will be felt throughout the Northwest, but railroad rates and the price of grain will establish varying limits for the sphere of benefit from the new course of trade. Speaking of this, President Hill said: "It is not outside the range of possibility that we could ship wheat from Devil's Lake to the Pacific Coast for this trade. We certainly could at a 55 cents a bushel cost for wheat at Devil's Lake or points west, as long as the demand for flour continues to grow as it has for the past six months." The cost of railroad freighting is high in comparison with water transportation and this necessarily limits the advantages of water routes to points comparatively near. The new railroad across Siberia is liable on this account to be less important as a grain route than is generally expected.

PUZZLING THE ROYAL SOCIETY.

The proceedings of the Royal Society of London were not taken so seriously a hundred and fifty years ago as they are now. A sailor who had broken his leg was advised to send to the Royal Society an account of the remarkable manner in which he had healed the fracture. He did so. His story was that, having fractured his leg by falling from the top of a mast, he had dressed it with nothing but tar and oakum, which had proved so wonderfully efficacious that in three days he was able to walk just as well before the accident. This remarkable story naturally caused some excitement among the members of the society. No other one had previously suspected tar and oakum of possessing such miraculous healing powers. The society wrote for further particulars, and doubted, indeed, whether the leg had been really fractured. The truth of this part of the story, however, was proved beyond the shadow of a doubt. Several letters passed between the Royal Society and the humble sailor, who continued to assert most solemnly that his broken leg had been treated with tar and oakum, and with these two applications only. The society might have remained puzzled for an indefinite period had not the honest sailor remarked in a postscript to his last letter:

"I forgot to tell your honors that the leg was a wooden one."—Harper's Round Table.

NEWS AROUND THE LAKES.

CHICAGO.

Special Correspondence to The Marine Record.

At the Independent Tug Line's floating dry dock the tug Protection is in for a new stem.

At the Chicago Shipbuilding Co.'s shipyard the schooner Sophia J. Luff was in dock for some general repairs and calking.

The steel barge Carrington left this port with 123,000 bushels of corn and 79,400 bushels of oats on a draft of 15 feet 4 inches.

Capt. James R. Raymond, representing the Standard Automatic Releasing Hook Co., of New York, is in this city this week.

The tug Violet Raber will leave here this week for Duluth to join the fleet of the Barry Towing & Wrecking Co. at that port.

H. W. Cook & Co. chartered the steamer Aztec and barge Zapotec for flaxseed and wheat to Kingston at 2½ cents; the steamers W. H. Wolf and Fred Pabst for oats to Buffalo at 1 cent.

The schooner Carrington took, this week, the largest cargo of grain ever loaded in Chicago River. It was 123,000 bushels of corn and 79,417 bushels of oats, on a draft of 15 feet 6 inches. The weight of the cargo was 4,834 tons.

Vice Commodore I. Ramsdell's new fin keel yacht "Blade," had her trial trip last Sunday to South Chicago, when she encountered a stiff breeze from the southwest, and proved herself a splendid worker to windward. Her dimensions are 30 feet water line, 45 feet over all, 8 feet beam, 22 inches draft of hull and with fin 8 feet. She has 5,180 pounds of lead in her fin keel. She was built in Chicago last winter.

J. A. Calback & Co. chartered the steamer Toltec, and barge Miztec for corn to Erie at 1½ cents; the schooner Geo. J. Boyce for oats to Port Huron at 1 cent. A. L. Fitch chartered the steamer Lindsay for oats to Port Huron at 1 cent; the steamer Sibley for oats to Buffalo at 1½ cents. J. J. Rardon & Co. chartered the steamer City of London for oats to Buffalo at 1½ cents; the steamer Intercean and consort R. Winslow, for oats to Buffalo at 1 cent.

The wrecking tug Protector was in port last week and left with four large pontoons in tow. The pontoons are built of one-half inch steel plates and are 34 feet long by 13 feet diameter, they are conical at the ends and are heavily braced within by angle irons and cross timbers, each pontoon will have a lifting power of about 200 tons—and are to be used in raising the Lehigh Valley Line steamer Cayuga, sunk by collision with the steamer J. L. Hurd at the foot of Lake Michigan in 1895.

At Miller Bros.' shipyard the steamer Iowa was in dock for a new wheel, the steamers Hattie B. Perene and H. L. Worthington for some calking; the steamer Francis Hinton for some new bottom planks, new rudder, new mast and general repairs; the steam yacht Pathfinder had her bottom scraped and painted, schooner A. Bradley received a new piece of keel and some calking; schooners Mary Collins received a new forefoot; Ella Ellinwood, John V. Jones, Ralph Campbell and America had leaks stopped; the tug Andrew Green received a new wheel.

BUFFALO.

Special Correspondence to The Marine Record.

Active work on the extension of the breakwater begins at once with a force of 200 men and a fleet of nine canal boats to make daily trips for stone from Lockport.

The government engineer has selected the steam yacht Glance for his use this summer. This port is large enough for him to build one for himself and then save money for the government.

Fifty boats cleared from Tonawanda, on the Erie Canal, in 24 hours. Over 4,000,000 feet of lumber, 3,000,000 pounds of oats and 400,000 pounds of pig iron, have gone out. This is the heaviest day's clearances ever recorded here.

Mr. John Gordon is not to be downed by any means, as manager of the Great Lakes Steamship Co., he has now an excellent fleet chartered for this season's work and is actually dictating rates and traffic over the several routes.

Steamboatmen are asking for a light and a fog whistle on Point Abino, which is nine miles up from Buffalo, on the Canada shore. They say that there is so much mist and smoke off the city that it is almost impossible to make the harbor a greater part of the time.

The sister ships Minneapolis and the St. Paul were here this week and I heard them favorably commented on by vesselmen. Capts. Jameson and Jackson are sailing these boats only launched about a week ago, and considering that they were built for the Welland Canal trade, they carry fairly well, too. About 2,800 tons is their capacity.

Several additions were made this week to the fleet in ordinary, the Pope, Savona and Bangor having received orders when they reached here to lay up. However, the Lagonda, which had been tied to the dock for two weeks, secured a load of coal for Duluth at 20c. The Merida goes to Toledo to load for Duluth, and the Sitka goes to Jack Fish Bay.

The steamer Langell reached here from Tonawanda to be docked to repair damages sustained in the race with the Elfin-Mere at Duluth recently, for which the licenses of the captains of both boats were suspended thirty days by

the steamboat inspectors. Now the query comes in if these men are competent or not, or will they be in thirty days hence, when the suspension judgment runs out?

Work is being pushed as fast as possible on the new steel elevator which the Northern Steamship Co. is building here. Most of the piles have been driven and work on the massive stone foundations is progressing rapidly. The foundation piers, which are close together over the entire area which will be occupied by the elevator, are being built on top of the double tier of piles which reach down about sixty feet to solid bottom. Workmen will begin putting together the steel framework in a short time.

Deputy Marshal Cavanaugh tied up the steamer C. W. Elphicke on a libel sworn out by the British & Foreign Insurance Co., which claims \$5,137.94 and \$250 costs for being obliged to pay for a lot of grain last fall that the company insists the boat spoiled. When the libel was served the Elphicke was not unloaded and Capt. Moody asked permission to move to another elevator in order to continue unloading. The steamer will, no doubt, be bonded and be allowed to continue business, especially as she has a cargo of coal for Chicago. This bonding business is all off color, so far as I can see.

Capt. McFarlane, of the Wilbur, appears to have got an idea that the average government official is just a trifle slow. He says that the new lighthouse on the North Manitou Island is a great success in the day time. You can see it a long distance, but it does not amount to much at night, as it has never been lighted up yet, though it was given out that it would be lighted at the opening of navigation. He states his conviction that it is too cold in this climate for the official to navigate the lakes to any extent before June. Perhaps the captain is partly right, too, as we have recently exchanged officers. In any case, lake pilots don't want too much assistance as these navy men believe that we have only a mud pilot kind of system on the great lakes, but they ought to try it once.

The coming season bids fair to see a lively rate war between the Erie Canal boat owners and the railroads. The boat owners claim that the railroads have started to cut under them and attempt to capture the major portion of the canal carrying trade. As a result the Buffalo Boat Owners' Association has retaliated and has adopted the following schedule of freight charges to New York city: Wheat, from 3½c. per bushel to 3c.; corn, from 2½c. per bushel to 2½c.; barley, from 2½c. per bushel to 2½c.; flaxseed, from 3½c. per bushel to 3c.; rye, from 3½c. per bushel to 2½c.; oats, from 2½c. per bushel to 2c.; iron, from \$1.20 per gross ton to \$1.10. These figures range from one-half to three-quarters of a cent lower than the reductions which the New York Central has made and they are a fraction lower than those made by the Erie Railroad. The canal boat owners say that if the railroads meet this cut or go lower, they will carry the war still lower, and they seem determined to make lower rates than the railroads.

DETROIT.

Special Correspondence to The Marine Record.

The ferry steamer Daisy was badly damaged this week by fire. She is a small boat and after getting alongside a dock the fire was easily extinguished. Loss estimated at \$700.

Mr. A. A. Parker, of the firm of Parker and Millen, takes a practical view of the present dullness in freights and while not grabbing for charters, expects the season to round up fairly good after all.

The propeller Arundell has been chartered to run between Charlotte, Oswego, Kingston and the Thousand Island. Point Lookout trustees are now negotiating for the steamer Gazelle, of Buffalo.

C. L. Parker made a few lumber charters this week, as follows: Schooner Glad Tidings, Cheboygan to Detroit, 5 trips, going rate; steam barge Martin, Alpena to Toledo; steam barge Ogemaw and consort Darley, Oscoda to Tonawanda. He also chartered the steamer City of Mt. Clemens a salt cargo from Oscoda to Toledo.

Next Sunday's trip of the steamer Frank E. Kirby will be enlivened by a homing pigeon experiment on a large scale conducted by Oliver Dustin, assisted by all of the Detroit fanciers who care to participate. Mr. Dustin will take 30 of his own birds with him to release at Toledo, intending to make an exact record of their return over the 60-mile course. He invites all owners of homing pigeons to send their birds with him. He will take 500 if that many are offered, and he expects from 250 to 300 of a certainty. Fanciers must bring their birds to the boat Sunday morning. He will, however, receive a hundred more the night before, as he can accommodate that number at the dock. Mr. Dustin flew several of his birds from Toledo last Sunday, releasing them at 1 p. m. They were somewhat shaken up by the storm.

Water gauges show about 17 feet 6 inches as present depth of water at Ballard's Reef. This is about the same as given by gauge readings for the past ten days. For this depth of water, the ledge of rock marked by a black spar buoy (No. 5½) should be avoided. To do this the range at the upper end of Grosse Isle should be just opened to the westward, giving the black spar (just north of the gas buoys) a berth of at least 75 feet. Just above Limekiln crossing along the Ballard's Reef course, the Duff & Gatfield range should be kept open to the westward, as along this course, in front of the Texas dock a ridge of boulders has been found. The least depth of water over these boulders is 17 feet. They are now being removed. The entire stretch of the channel from Bal-

lard's Reef to the south end of Bois Blanc Island has been swept this spring, and several boulders located, just below a depth of 17.5 feet. These boulders will be removed as soon as possible, the work having commenced a week ago.

CLEVELAND.

Special Correspondence to The Marine Record.

The low ore rate of 70 cents is all that is offered from the head of the lakes despite the persistence of vessel owners to get a decent figure.

Capt. J. B. Watts of Detroit, has been appointed master of the Menominee Line Steamer Briton and left on the first trip of the season on Tuesday night.

Nearly all of the boats have fitted out for the season, and are already at work, though it is difficult to see how they can pay running expenses at the rates of freight now going.

Some charters will be made as a result of ore sales now under way. There will be enough just now to supply all vessel owners, who are willing to take 70 cents for the season.

The Cleveland Steel Canalboat Co. is said to have made an arrangement with the Big Four road by which the road will furnish all the tows of the company as much grain as they can carry all summer, and they will therefore drop the steel rail trade.

It is learned that the Illinois Steel Co. has closed all contracts for this season's supply of iron ore, according to reports received here, against the statement that the company had not done so. The purchases amount to 1,000,000 tons in addition to 300,000 tons not delivered on last year's contracts, making 1,300,000 tons in all.

The Cuddy-Mullen Coal Co. have established a new plant at Erie, Pa., and are erecting there a large car dumper similar to the one at this port. With a brisk trade carried on at Cleveland, Erie, Amherstburg, Sandwich and Detour, the Cuddy-Mullen Coal Co. will soon find itself a most important factor in lake commerce.

Capt. Paul Howell, of Erie, and one of the best known vessel masters on the lakes, will sail the Bradley Line steamer Hesper this season. There are but few more reliable masters than is Capt. Howell, and having so good a boat as the Hesper, he is sure to get in a comfortable and prosperous season.

Sailors along the Welland Canal want the Dominion Government to pass a retaliation law that will require American vessels to ship Canadian crews to take them through the canal. Canadian seamen claim that they are shut out in every way, even train crews being changed as soon as the line is crossed.

Lieut. Landrey, U. S. N., and Supt. Chapman, of the life saving service, was at this port Wednesday on their periodical tour of inspection. There can be only one opinion about the order and discipline which Capt. Motley of the local station maintains, and as a matter, of course, his superiors in the service were eminently satisfied with all they investigated relative to the equipment, upkeep and drill of the crew.

Capt. F. D. Herriman, of Chicago, representing the underwriters, and Capt. Dan McLeod, representing the vessel owners, held a survey on the steamer John M. Glidden at the Ship Owners' drydock on Wednesday. It will cost about \$4,000 to repair her. A large piece of metal was found in a plank in the Glidden's bow, and Capt. McLeod thinks it came from the boiler house of the steamer Grand Traverse, sunk off Colchester, Lake Erie, which the Glidden struck.

FLOTSAM, JETSAM AND LAGAN.

The S. R. Kirby and the consort Hartwell have been placed this week, Escanaba to Ohio ports, at 40 cents.

The Bielman damaged a dredge at Toledo to the tune of about \$2,000. The dredge was promptly drydocked.

The Cummings released the schooner Alice M. Beers from her critical position at Glen Harbor and the vessel is not damaged.

The ore purchases made by the Illinois Steel Co., supplemental to the Minnesota Iron Co. contract, are placed at between 400,000 and 500,000 tons, most of which will come through Escanaba.

When the steamer L. C. Waldo discharged her cargo of flaxseed at Toledo the weighing out overran the weighing in by only twenty-one bushels on 169,346 bushels, this shows a remarkable agreement by the two elevators.

The steamer Greyhound of Toronto has been purchased by R. W. Hamlin, of St. Catharines, and Mr. Walker, of Walkersville. It is thought that the steamer may be put on the route between St. Catharines and Toronto.

The report of the traffic passing the American and Canadian canals for April shows a decrease of about 80,000 tons as compared with April, 1896, the total being only 199,500 tons. This was carried by 260 craft, a decrease over April, last year, of 165.

The stock piles of the Metropolitan Land & Iron Co., which has laid off 500 men, are full, and it has made no sales. Its stock pile room was well filled last fall, but little having been shipped the past year. The outlook for an increase of force in the immediate future is not promising.

Owing to differences between the wholesale fish dealers of Ottawa county and the United States Express Co. as to rates of transportation, the fish dealers have put the steamer Maud Preston on the line between Port Clinton and Sandusky and will ship all fish out of their terri-

tory by water to Sandusky and thence by rail through some company other than the United States.

The steamer Waldo C. Avery loaded 4,500 tons of cargo at Escanaba this week; the Pathfinder, 3,400 tons, and the Sagamore, 3,600 tons, which goes to show that the foreign tramps are not "in it" with lake tonnage. The lake steamers also carry these cargoes on a draft of from fourteen to sixteen feet.

The master of the little schooner Edward Blake, of Bay City, died when two days out from port. They were from Manitoulin Island, and the mate reported the loss of the captain at Port Huron. The master had been unwell for some time and his friends advised him not to sail this season. His name was Lewis Charbonneau.

The plan of utilizing a foremast as a smokestack first appeared on the lakes in connection with the oil barges built for the Standard Oil Co. In the first of the Rockefeller schooners put out last fall it was not adopted, but later ones are using the smokestack spar. Another innovation for lake vessels in the new schooner Jenney in the fact that the upper works are built entirely of steel, thus leaving no part of the vessel liable to destruction by fire.

Duluth vesselmen look for a good fall and are patiently counting the weeks that will intervene between now and September 1. There are signs that the vesselmen count on and one of these is that 2 cents is offered now for wheat tonnage in September. It is said that no vessel tonnage has been engaged at that figure, which fact is supposed to indicate that the fall will recompense them for the losses and lack of business of the first half of the season.

Sodus Bay fishermen state that the water in Lake Ontario is fully three feet higher than last year's summer level and at least 18 inches higher than a year ago at this time. This is in accordance with the long entertained idea about height of water in the lake. The fresh water sailors of Lake Ontario have always believed that the water rises once in fourteen years and then gradually lowers an inch or so a year, all during the thirteen years following, maximum high water coming with a rush with the fourteenth year.

It is reported that there have been 29 vessel charters made for lumber at Duluth. Only two or three have been made to go to Chicago. The lumber trade is not as brisk as it was a month or two ago. Firms that bought stocks two weeks ago appear to be in no hurry to have the stuff sent forward. The cargo rate for lumber is still quoted at \$1.62½. Lumber brokers admit that there is no money in the rate for the vessel owners. They say the rate could be broken, but it is so low that there seems to be no disposition to do so.

For the first time since the panic of 1893 there is more freight to be carried by the schooner fleet than there are vessels, says a Chicago exchange. Large quantities of ties are being contracted for and while lumber is not moving freely the cedar trade much more than offsets the loss in lumber. Vesselmen are talking an advance in freight rates, something that has not been heard of for five years. During the long depression schooners have ceased to have any selling price and when put up at forced sale have gone for a song. The upturn has caused a great improvement in sentiment on the market.

Manitowoc is to be made a depot for the distribution of coal to northwestern points through the establishment of a large receiving yard on the car ferry slip of the Chicago & Northwestern Railway at the inner end of the harbor. The plant is to be erected and operated by the Pennsylvania & Ohio Fuel Co., and the dock room secured is 800 feet long by 400 feet wide. The frame work of the trestles will be of iron, and in addition to this 500,000 feet of timber and planking will enter into the construction of the plant. The hoists will be of the most approved kind, so as to assure rapid handling of cargoes. Work upon the plant is to begin next week, the intention being to have it ready for business by the first of August. The improvement will greatly facilitate the discharging of cargoes, something which is deemed absolutely necessary with the prevailing freights.

LAKE FREIGHT RATES.

Beginning with 1877 vessels tied up for the season to move ore from Marquette at \$1.40, the average "wild" rate for that year being one cent higher, or \$1.41. During the same season ore was shipped from Marquette at \$1 on contract and the season "wild" rate was 98 cents. Freights were lower in the following year, the Marquette contract rate having been 10 cents less than the year previous. The seasons of 1880 and 1881 were the most profitable to owners of tonnage, ore having been carried on contract for \$2.75 and \$2.45 a ton respectively.

The decline in freight rates is displayed in the figures which follow, the season contract rate from Marquette being used: 1882, \$1.75; 1883, \$1.20; 1884, \$1.35; 1885, \$1.05; 1886, \$1.20; 1887, \$1.63; 1888, \$1.15; 1889, \$1.10; 1890, \$1.25; 1891, 90 cents; 1892, \$1.15; 1893, \$1; 1894, 80 cents; 1895, 75 cents; 1896, 95 cents; 1897, 65 cents. At one time, 1887, the "wild" rate was as high as \$1.87, while in 1880 the freight rate averaged \$2.20, a period of prosperity for vesselmen. In the seasons 1894, 1895, 1896 low "wild" freight rates prevailed, the average rates having been 60, 92 and 66 cents respectively.

The average "wild" freight rate from Duluth was \$2.23 in 1887. The contract rate shows a decline from \$2 in 1887 to 70 cents this year.

The average daily rate on coal from Cleveland to Milwaukee since 1887, not including the current year, has been 61 cents; to Duluth, 49 cents. A statement showing the average daily coal freights to Milwaukee conveys a good idea of the reduction in transportation charges. In 1887, \$1.06 was paid; 1888, 84 cents; 1889, 54 cents; 1890, 64 cents; 1891, 61 cents; 1892, 58 cents; 1893, 48 cents; 1894, 48 1-2 cents; 1895, 54 cents; 1896 33 1-2 cents. The indications are that the Milwaukee rate will be lower in 1897 than it was in the preceding season.

In 1880 5.7 cents was the average daily rate on wheat from Chicago, and there was a gradual decline until 1886 and 1887, when rates were 3.6 and 4.1 cents respectively. Freight charges continued to go down, and in 1896 the average rate was 1.7 cents. Taking the daily rates and striking an average does not show the fluctuation during the different seasons. Late in the fall of 1887 a Cleveland vessel was paid 12 cents a bushel for carrying a grain cargo from Fort William to Buffalo.

DAMAGED GRAIN.

On the subject of damaged grain the Buffalo Enquirer has the following to say: "There is renewed complaint on the part of vessel, grain and insurance men on account of the custom house ruling that obliges the owners of damaged grain that comes in here in bond to pay duty on it for its full value. They say that whenever anything else dutiable arrives here there is an appraisal made of it and the duty is assessed on the valuation thus fixed. If it is damaged there is an allowance, but grain must pay on the invoice and nothing else. When the wet wheat in the cargo of the steamer Sauber was to be sold there was an effort made to obtain an appraisal of it, but it was refused. At one time it was feared that the price offered would not equal the 20 per cent duty, and in this case there would be nothing to do but take the grain out into the lake and throw it overboard, for if it is landed it is at once subject to duty. This has been done in former seasons. Sometimes nearly a whole cargo has thus been sacrificed. As the government gets nothing out of the grain in such a case, it would seem to be good policy to treat grain after the fashion of ordinary merchandise."

There can be no two opinions about the injustice of exacting full duty on damaged goods. Damaged wheat when shipped through in bonds should be assessed at its market value and duty charged accordingly.

A NEW ELEVATOR AT BUFFALO.

The contract for the foundation of the new 1,000,000-bushel Eames steel elevator, which is to be built on Buffalo Creek about 500 feet east of the Ohio street bridge, was sub-let on Friday to the MacDonald Engineering Co. of Chicago, by the principal contractors, the Steel Storage & Elevator Construction Co., of Connersville, Ind.

The Eames elevator will be built of steel throughout, above the foundation, and its owners consider it so thoroughly fire-proof that they will carry no insurance. Not only will everything about the building be of steel, including the stair-plate, beams and floors, but by a pneumatic elevating process, which will be used for the first time in Buffalo in this new elevator, the grain in storage will be so thoroughly separated and aerated that there will be no danger, it is thought, of its heating or requiring to be turned.

The steel storage tank system, which has been used successfully in many large elevator plants throughout the West, consists of a series of cylindrical grain tanks connected with a main power building by pneumatic tubes, through which the grain is delivered to the tanks, or can be pumped out again when wanted for shipment. By an arrangement of powerful fans there is practically no limit to the height to which the grain can be elevated by this process.

The Eames elevator will be provided with nineteen of these hermetically-sealed, air-tight and fire-proof tanks. Seven of the tanks will be of a capacity of 100,000 bushels each, and the other twelve of the elevator will hold 25,000 bushels of grain apiece. Sufficient land is controlled by the owners of the elevator, however, to allow of increasing the total capacity from 1,000,000 to 4,000,000 bushels in the future. Each of the grain tanks will be subdivided into compartments so that cargoes or shipments of any size can be kept separate. And all of the compartments will have hopper-bottoms, so as to be self-cleaning.

The main building, in front of the tanks, will be 146 feet high and 40 by 130 feet on the ground. Both it and the tanks will rest on the solid rock, which at the point where the elevator is to be built is found but seven feet below the water level. No piles will be required.

The capacity of the elevating legs will be 30,000 bushels an hour.

ANOTHER LARGE CARGO.

The Lake Superior grain cargo record was again broken this week. The steamer Zenith City loaded 50,500 bushels of rye, 134,981 bushels of wheat, a weight of 5,463 tons, at Duluth. The previous record was held by the Andrew Carnegie on 182,000 bushels of wheat or 5,460 tons. The Zenith City loaded down to sixteen feet, and took the bottom while loading, but was subsequently floated and got away out of port all well.

NOT A FAIR RISK.

Insurance companies chartered in Canada have decided not to insure barges known as pinflats, carrying grain, and no Canadian company will take a risk upon them. This means much to Montreal, as the pinflats engaged in the grain-carrying trade between Prescott and that port have a total capacity of 500,000 bushels, and that with quick dispatch these boats can handle 10,000,000 bushels of grain during the season. The engagements of grain this year via the St. Lawrence route are very heavy and the grain will have to be brought to Montreal from Prescott and Kingston somehow. It the pinflats are excluded from the trade altogether there are not nearly enough vessels to ship cargoes by water, and as a last resort grain will have to be carried by rail from Prescott and Kingston to fulfill existing engagements. This, it is claimed, would act as a bar to the St. Lawrence route, and drive the grain trade to Buffalo. The objectionable features of pinflats from the underwriting point of view are that they cost from one-fourth to one-third the price of ordinary barges; that they are made cheaply and run cheaply, the ordinary barges having a complement of from three to five men and the pinflats having only a man and a boy; also that if an accident takes place they open up and are apt to destroy the whole of their cargoes, particularly grain, whereas an ordinary barge would only damage a small portion.

THE ST. LAWRENCE ROUTE.

It is learned that the Dominion minister of railways and canals is working at the transportation problem, and he hopes to very greatly reduce the cost of transportation from the West. The deepening of the canals of the St. Lawrence to fourteen feet is only the first step. One of the possibilities is the establishment, in connection with the proposed new fast Atlantic steamship service, of auxiliary freighters, which could take grain and other products at the head of navigation at Fort William or Duluth or at central points on the other lakes and carry them alongside the ocean liners in Montreal. With thorough organization vessels of large carrying capacity, and but one transient shipment between Duluth or Fort William and Liverpool, it is believed that the St. Lawrence route will become the great channel between Europe and the West.

LARGE IRON RUDDER FRAMES.

The Cleveland City Forge & Iron Co. is now at work on four rudder frames for the battleships Kearsarge, Kentucky, Illinois and Alabama, the first three of which are now under construction by the Newport News Ship & Engine Building Co., Newport News, Va., while the fourth is being built by the Cramp Ship & Engine Building Co., Philadelphia. The rudder stocks are 18 inches finished diameter, and each has a 5-inch hole bored axially through it. Owing to its intricate shape the rudder stock portion of the frame had to be forged solid throughout and machined out afterward. The stock forging weighed about 25 tons in the rough.

These rudder frames are the heaviest and most intricate ever attempted in this country. In addition to these the Cleveland City Forge & Iron Co. has made seven, though not as heavy nor as intricate, for the following battleships and cruisers: New York, Columbia, Minneapolis, Indiana, Massachusetts, Iowa and Brooklyn. These seven and the four now building are the largest vessels in the new navy.

A MERITED VERDICT.

The grand jury of the criminal branch of the United States circuit court held in New York has indicted Capt. Edward M. Reed, of the ship T. F. Oakes, for maliciously and without justifiable cause withholding food from the crew of his vessel on the voyage from Hong Kong to the port of New York.

HYDROGRAPHIC OFFICE.

The object of the Hydrographic Office is to place within reach of mariners, at no expense to them, such useful information as cannot be collected profitably by any private individual, but which the government can readily gather, without additional cost, through agencies already established.

It is compiled in the Division of Marine Meteorology, from reports received by branch offices, maritime associations, light-house board, coast and geodetic survey, revenue marine, life saving service, weather bureau, newspapers, etc. These bulletins will be posted in all cities, where they can readily be consulted by masters of vessels and others interested. The maritime community is invited to send any information of value to this publication, to the Hydrographic Office at Washington, or to one of its branches offices at Boston, Customhouse; New York, Maritime Exchange, Produce Exchange Building; Philadelphia, The Bourse Building; Baltimore, Customhouse; Norfolk, Customhouse; Savannah, Customhouse; New Orleans, Customhouse; San Francisco, Merchants' Exchange; Portland, Oregon, Chamber of Commerce, 31 First street; Port Townsend, Customhouse; Chicago, Room 1621, Masonic Temple; Cleveland, No. 912 Arcade Building. These offices are fully supplied, with information and publications pertaining to navigation, and masters and officers of vessels are cordially invited to consult them.

CRAMP ON SHIPBUILDING. LETTER TO SENATE COMMITTEE.

A meeting of representatives of the shipping interests was held in the room of the Senate Committee on Commerce at Washington. Among those present were: C. A. Griscom, W. P. Clyde, T. W. Hyde, A. R. Smith, C. H. Cramp, Samuel S. Sewall, H. P. Booth, E. Bliss, Aaron Vanderbilt, D. C. Mink, F. J. Firth, C. H. Keep, ex-Senator G. F. Edmunds and Senators Frye, Elkins, Hanna and Perkins. The meeting was held for the purpose of promoting legislation looking to the encouragement of American shipping. There was a general exchange of views. Senator Elkins' bill providing for a discriminating duty on goods imported in American vessels afforded a basis for much of the proceedings, but there was a want of unanimity of opinion upon all of its provisions. Mr. Griscom presided and the meeting was private.

Several addresses were made during the day by those in attendance, one of the most important being the following decidedly interesting and important letter from Charles H. Cramp, Esq., president of the Cramp Shipbuilding Company. It presents the shipbuilders' side of protection for American ships very forcibly:

"Sir: We have to deal with real facts and actual conditions. The interests of shipowning and shipbuilding are identical because no nation can successfully own ships that cannot successfully build them.

No nation can either build or own ships when, unprotected and unencouraged, it is brought in competition with other nations that are protected and encouraged.

This is the existing condition of the shipowning and shipbuilding interests of the United States.

The resulting fact is that the enormous revenue represented by the freight and passenger tolls on our commerce and travel is constantly drained out of this country into British, German and French pockets, in the order named, but mainly British; while the vast industrial increment represented by the necessary shipbuilding inures almost wholly to Great Britain.

For this drain there is no recompense. It is sheer loss. It is the principal cause of our existing financial condition.

So long as this drain continues no tariff and no monetary policy can restore the national prosperity.

Until we make some provision to keep at home part at least of the three hundred and odd millions annually sucked out of this country by foreign shipowners and shipbuilders, no other legislation can bring good times back again.

It is a constant stream of gold always flowing out.

The foreign shipowner who carries our oversea commerce makes us pay the freight both ways.

For our exports we get the foreign market less the freight.

For our imports we pay the foreign market price plus the freight.

No finespun theory of any cloistered or collegiate doctrine can wipe out these facts.

The fact that so long as the freight is paid to a foreign shipowner, so long will it be a foreign product, is fundamental and unanswerable.

The English steamship is a foreign product, and its earnings, which we pay, are a foreign benefit.

No sane man will argue that a foreign profit on a foreign product can be a domestic benefit.

Add to this the fact, equally important, that the carrier of commerce controls its exchanges and the conditions of commercial, financial and industrial subjugation is complete. Such is our condition today.

Great Britain has many outlying colonies and dependencies.

The greatest two are India and the United States.

She holds India by force of arms, whereby her control of that country costs her something. She had to pay something for her financial and commercial drainage of India.

She holds the United States by the folly of its own people, whereby her control of this country costs her nothing. She has to pay nothing for her financial and commercial drainage of the United States.

But the amount of her annual drainage of gold from the United States far exceeds that from India.

Therefore, the United States is by far the most valuable of all dependencies of Great Britain.

In the relation of England to India there is something pitiable because India is helpless.

In relation of the United States to England there is nothing that is not contemptible, because it is the willing servitude of a nation that could help herself if she would.

England is wide awake to these conditions and keenly appreciates their priceless value to her.

The United States blinks at them, half dazed, half asleep, insensible of their tremendous damage to her.

England clearly seeing that, in this age, more than ever before, ocean-empire is world-empire, strains every nerve

to perpetuate her sea power and exhausts her resources to double-rivet the fetters which it fastens upon mankind.

Though in 1885 England already had a navy superior to those of any two and equal to those of any three other powers, her new navy, with what remains most available of the old one, overshadows the world and makes the sea as much British territory as the county of Middlesex.

Since 1885 England has expended \$517,000,000 for new ships of war and their armament. During eleven years she has built thirty-eight first-class battleships, three second-class battleships, nine armored cruisers, twenty first-class cruisers, fifty-one second-class cruisers, thirty-three third-class cruisers; thirty gunboats; twelve composite sloops, and seventy-four torpedo destroyers, including the vessels authorized in the current year's program.

The aggregate is 270 vessels of 1,136,575 tons total displacement, 1,674,700 horse power.

Of the navy England already had in 1885, there remain available 42 armored ships, 34 cruisers, 11 sloops, 19 gunboats and 95 torpedo boats, which she is re-engining, re-arming and otherwise modernizing as rapidly as she can.

In personnel afloat she has augmented her force from 52,600 in 1885 to 100,500 in the estimates for 1897.

In other words, England has doubled her navy in personnel and material and more than quadrupled it in warlike efficiency during eleven years of the profoundest peace the world ever saw.

Even greater exertions has England put forth in the augmentation of her merchant marine. During the calendar year 1896 she added 1,380,000 tons of new steel steam shipping to her merchant fleet, breaking up meantime 530,000 tons of old and obsolete shipping which could no longer be operated profitably; a net addition of 850,000 tons to the total of her merchant marine by the register, but a practical addition of the whole 1,380,000 tons, because the 530,000 tons broken up had done its work for her aggrandizement and simply passed through the scrap heap and the mills into the new tonnage.

No great fact can exist without a great reason.

In recent years Germany, on a large scale and in a systematic way, and this country, on a small scale and in a spasmodic way, have put forth efforts in the direction of sea power.

England instantly takes alarm. To her the growth of any other sea power, even if its scope be comparatively small and its extent comparatively feeble, is a peril second only to the landing of an invading army in Kent.

England is determined that she shall be not only the supreme sea power, but also that except within limits set by herself there shall be no other sea power at all.

She will tolerate the growth of any other sea power only so far as the point at which it begins to affect her naval supremacy or dispute the ocean monopoly of her merchant marine.

The moment any other national aspiration toward sea power reaches that point England must be prepared to crush it.

She will crush it by intrigue, by cajolery, by treaties, if she can. She will crush it by preponderating force if she must.

Ever since two first-class American ships were put in the transatlantic trade under American management every device of foul play that selfish ingenuity can invent and every resort that unscrupulous rivalry can suggest have been exhausted by the English press and the English administration to defame and discredit them.

English officials abroad, from ministers and consuls down, industriously reproduce in the newspapers of Japan, Chili, Argentine and Brazil the misstatements of the English press about American vessels.

The British postoffice delays the American mails for days in the slower ships of the Cunard line, rather than send so much as one letter by the American line.

Our postoffice responds by liberal allotments of its European mails to all the British lines.

The result of all this is that while this country has never known such industrial stagnation and such financial distress, England has never known such industrial activity and financial prosperity as now.

Does it not occur to men who look the least bit below the surface that the warfare for ocean-empire and the strife for commanding sea-power, which England forces upon the rest of mankind, have reached a stage so acute that her prosperity unalterably means the misery of everybody else, and that everybody's loss is inevitably her gain?

What is the response of the United States to this tremendous exertion of English energy and resource to the aggrandizement of her sea power?

To the English estimates for the current year for further increase of her navy amounting to eleven million nine hundred and five thousand pounds sterling, say \$57,334,500, and a program involving 108 new ships in all stages between laying down and completion, the United States responds by a sudden halt in even the comparatively feeble program fitfully pursued since 1885, and a flat collapse of the new policy of the new navy as a whole.

To the 1,380,000 tons of new merchant shipping built by England during the past year, what will be the response of the United States?

Now the future lies wholly in the hands of Congress.

From that quarter comes no sign.

A tariff bill framed to produce revenue, and at the same time to promote and encourage American industries, is to be passed. To greater or less extent this tariff is calcu-

lated to promote and encourage every American industry but two—shipowning and shipbuilding.

As I have already said, this ceaseless ebb of gold without compensation is the tribute this country pays to England, and it is paid through English shipowners.

The United States has never been able to get any of it back except by borrowing it on bonds.

England is keenly alive to these great economic facts and their results.

Is the United States to be forever blind to them and their significance?

These are the questions which confront us.

Very respectfully,

(Signed) CHAS. H. CRAMP.

NOTICE TO MARINERS.

UNITED STATES OF AMERICA—NORTHERN LAKES AND RIVERS—MICHIGAN.

Treasury Department,
Office of the Light House Board,
Washington, D. C., May 8, 1897.

HERSON ISLAND UPPER LIGHT, NO. 9.

Notice is hereby given that, on or about May 15, 1897, this fixed red tubular lantern light, at the edge of the timber, near the lower end of Herson Island, St. Clair River, will be moved nearer to Herson Island Middle Light, No. 8, making the distance between the lights about 525 feet.

By order of the Light-House Board:

W. S. SCHLEY,
Captain, U. S. Navy, Chairman.

THE POE LOCK IS ALL RIGHT.

An article has gone the rounds of the press reflecting on the new lock at St. Mary's Falls Canal and a good deal of interest has been manifested relative to whether the machinery would hold out for the season or not. The following correspondence on the question will give owners and masters full confidence in the prompt and accurate working of the new lock at the "Soo."

United States Engineer Office,
Detroit, Mich., May 7, 1897.

Editor Marine Record, Cleveland, O.

Having recently noticed that several newspapers have published items relating to the Poe Lock at Sault Ste. Marie, which convey grossly incorrect ideas concerning its operating machinery, I think that it will interest vesselmen to have a direct statement of the true condition of affairs, and therefore transmit to you the enclosed copy of letter from the general superintendent of the canal, believing that you will be pleased to publish it in the next issue of your paper.

Very respectfully,
G. J. LYDECKER,
Lieut. Colonel, Corps of Engineers, U. S. Army.
Sault Ste. Marie, Mich., May 5, 1897.

Editor of the Marine Record, Cleveland, O.

Sir: The machinery of the Poe Lock is and has been working in a very satisfactory manner since the opening of navigation. Last season there were some parts that proved to be too weak and wore out rapidly. During the winter these parts have all been made new and of stronger pattern. They are now and have been working well and there need be no apprehension among those using the canal that there will be any delay caused by the machinery.

Very respectfully,
E. S. WHEELER,
Asst. Engr. and Genl. Supt.

A PROMINENT LAKE SHIPYARD.

We are glad to learn that the shipbuilding firm of F. W. Wheeler & Co., W. Bay City, Mich., have been able to consummate the proposition made to creditors in February last whereby 90 per cent of the creditors accept in lieu of cash bonds which run from two to seven years, bearing 6 per cent interest, for their claims. This was a remarkable feat of financiering in these troublous times, and shows in what esteem Mr. Wheeler is held by the gentlemen with whom he has done business for many years. We predict that with the recurrence of good times in the building of lake ships that this firm will have no trouble in working out of their difficulties, and that the reputation which they hold for building first-class boats will be more than made good in the future.

Mr. Wheeler's health, which last year was such that he could not give his personal attention to his yard, has been entirely restored, and he is now able to take hold of things with his old time vigor. This will be especially gratifying to his hundreds of personal friends, and will make his creditors feel that their security will be greatly enhanced by his being able to personally oversee the thousands of details of this great establishment.

In the reorganization of the company the beginning of the year S. T. Crapo, general manager of the Flint & Pere Marquette Railroad Company, of Saginaw, Mich., and H. M. Gillett and C. W. Stiver, of Bay City, Mich., were the new directors. The directors subsequently elected officers as follows: F. W. Wheeler, president; H. T. Wickes, of Saginaw, Mich., vice president; C. Y. Stiver, secretary, and Jno. S. Porter, of Saginaw, Mich., treasurer.

This firm has just closed a contract for a large ocean tug to be used at New Orleans, mention of which was made in a previous issue. This firm has under consideration a proposition to locate in a thriving city, the expense of moving and site to be donated. Matters are not yet far enough advanced for the public to be taken into confidence.

A WESTERN PIONEER.

Jonathan Carver is said to have been born in Stillwater, N. Y., in 1732, and in his "Travels Through the Interior Parts of North America" he has left a record of his service with the Massachusetts contingent in the Lake George region during the French and Indian war. He narrowly escaped death in the massacre that followed the surrender of Fort William Henry to Montcalm, but managed to fly to the woods, and after wandering for three days in an exhausted condition, for he had been wounded, beaten and nearly stripped by the Indians, he reached the English lines. Later he participated in the capture of Crown Point and when the war was over he formed the bold resolution of crossing the continent to the Pacific ocean, on which he intended to establish a trading post.

Leaving Boston in June, 1766, by way of Albany and Niagara, he reached the frontier post of Mackinac, and traveled thence with a fur collecting party by the Fox and Wisconsin rivers to Prairie du Chien, where he started on his work of exploration in a canoe, accompanied by a Canadian interpreter and a Mohawk servant. November 17 he reached the Falls of St. Anthony, which he was the first white American to see, and of which he has left a description. Following the Mississippi up to the mouth of the St. Francis, he returned and explored the Minnesota river for 200 miles, passing the winter with the Santee Indians. From them he heard much of the Shining (Rocky) Mountains, of which he wrote: "Probably in future ages they may be found to contain more riches in their bowels than those of Hindostan and Malabar, or than are produced on the golden coast of Guiana, nor will I except even the Peruvian mines."

He also told of a country west of the Rocky Mountains "full fraught with all the necessities or luxuries of life, and where future generations may find an asylum." To Carver is attributed the first mention of "the Oregon, or the River of the West," and philologists have been puzzling over the meaning of the word ever since.

In April Carver accompanied the Indians to a cave on Lake Pepin, where they buried their dead. Then after returning to Prairie du Chien for supplies, he made his way by the St. Croix and by portages to Lake Superior, the northern shore of which he followed to Grand Portage, where he hoped to obtain from Hudson Bay traders stores that would enable him to cross the continent. Disappointed in this, he followed in his birch canoe the northern and eastern coast of Lake Superior to Sault Ste. Marie, reaching Mackinaw in November, 1767. He had traveled nearly four thousand miles and visited twelve nations of Indians. Twenty-five years later the feat he had attempted of crossing the continent was actually performed by the young Scotchman, Alexander McKenzie.

In 1768 Carver went to England and sought from the crown the reimbursement of his expenses. The government took possession of his papers, but finally allowed him to publish them. Twenty-three editions of his book in four languages have been issued, but he was reduced to the direst poverty and died in London in destitution, January 31, 1780. A representation of his sufferings brought out in an edition of his book published for the benefit of his family led to the institution of the English Literary Fund for the relief of destitute authors of all nations, an institution which now has an annual income of some \$15,000.

BRITISH SHIPBUILDING.

The shipbuilding program of the British Admiralty for the coming year shows four new battleships and three third-class cruisers. The former will probably be either of the Canopus or Majestic class. At first sight this would seem to be a very modest list, but during the financial years 1897-98 the following vessels will be either building or completing: fourteen new battleships, eight first-class cruisers, nine second-class cruisers, two sloops, four twin-screw gunboats, fifty-two torpedo boat destroyers, eight light-draught steamers for special service, one royal yacht. Thus the total number of vessels under construction will be 108; their aggregate displacement will be 380,000 tons; and their aggregate horse-power will be 800,000 of indicated horse-power. The tendency with ordinary boilers is to steadily increase the pressure per square inch, 200 pounds being used in many cases. Two new mail steamers of large dimensions are being built upon the Clyde, the pressure in whose boilers will be 205 pounds to the square inch. During the year a cargo vessel, the Inchmona, built on the Northeast Coast, has

commenced work, the engines are quadruple expansion, with five cylinders, and the boilers, which are of rather small diameter, work at a pressure of 255 pounds per square inch. Since the beginning of this year the Pennsylvania, 13,726 tons, built at Belfast for German owners, has commenced running in the North Atlantic trade. In point of tonnage this vessel is the nearest approach yet made to the Great Eastern, which measured 18,915 tons. The Pennsylvania has a length of 560 feet, as compared with 678 feet for the Great Eastern, and 601 feet for the Campania and Lucana. The White Star Line have under construction the Oceanic, of 17,000 tons, 704 feet in length, and a sea speed of over 20 knots. It is expected that this vessel will be launched in January next. One of the most interesting features connected with mercantile shipbuilding is what may be described as the development of type in cargo steamers. The latest contribution to this process of evolution is the appearance during the past year of the trunk-deck steamer, the peculiarity of this design being the fitting of a continuous straight-sided erection on the upper deck of the vessel. Three such steamers have been built, each of about 2,600 tons gross, and seven more are under construction.

From the returns compiled by Lloyd's Register of Shipping, it appears that, excluding warships, there were 428 vessels of 828,481 tons gross under construction in the United Kingdom at the close of the quarter ended 31st of March, 1897.

These figures exceed those for last quarter by 44,000 tons, and are the highest which have been received since March, 1892. Of the vessels under construction in the United Kingdom at the end of March, 349 of 623,671 tons are under the supervision of the surveyors of Lloyd's Register with a view to classification by this society. In addition, 31 vessels of 82,175 tons are building abroad with a view to classification. The total building at the present time under the supervision of Lloyd's Register is, thus, 380 vessels of 705,846 tons.

The following table gives the total figures for vessels now under construction in the principal shipbuilding districts of the country, as compared with those for the same period last year. Each district, of course, includes places in the neighborhood of the port after which it is named:

DISTRICT.	Description.	Mar. 31, 1897.		Mar. 31, 1896.	
		No.	Gross Tonnage	No.	Gross Tonnage
Belfast.....	Steam....	24	147,242	19	104,993
	Sail.....	.....	.....	1	2,254
	Total....	24	147,242	20	107,247
Barrow and District.....	Steam....	7	7,345	4	6,270
	Sail.....	3	3,690	3	5,060
	Total....	10	11,035	7	11,330
Glasgow.....	Steam....	86	160,719	81	162,596
	Sail.....	1	250	10	4,550
	Total....	87	160,969	91	167,146
Greenock.....	Steam....	34	74,800	32	62,367
	Sail.....	4	10,760	9	14,878
	Total....	38	85,560	41	77,245
Hartlepool and Whitby.....	Steam....	17	47,420	17	46,516
	Sail.....	.....	.....	.....	.....
	Total....	17	47,420	17	46,516
Tees.....	Steam....	26	67,506	24	48,040
	Sail.....	1	8	2	1,260
	Total....	27	67,514	26	49,300
Tyne.....	Steam....	68	129,731	50	136,130
	Sail.....	.....	.....	.....	.....
	Total....	68	129,731	50	136,130
Wear.....	Steam....	44	134,321	48	137,116
	Sail.....	.....	.....	.....	.....
	Total....	44	134,321	48	137,116

G. J. Lydecker, Lieut. Col. Engineer, U. S. A., asks for proposals on the cost of removing obstructions from Ballard Reef Channel, Detroit, Mich. Bids are to be opened June 1.

STRENGTH OF SHIPS.

(By Joseph R. Oldham, N. A. and M. E.)

Prof. Mosely says that the strongest form that can be given to a solid body, in the formation of which a given quantity of material is to be used and to which the strain is to be applied under given circumstances, is that form which renders it equally liable to rupture at every point, so that when, by increasing the strain to its utmost limit the solid is brought into a state bordering upon rupture at every other point. Moreover, the strongest form is also the form securing the greatest economy of material.

As to the structural strength of ships. It is not unusual to find strain existing in the side plating butts below the upper deck and in the bilge plating butts above the bottom while the upper shear strakes, deck stringer plates, keel and bottom plates show no signs of distress. Now such straining could not be caused by longitudinal bending, because stress due to bending moment is a maximum on the upper stringer and shear strakes and at the keel and lower bottom plating alternately. The distress at the upper turn of the bilge might be attributed to transverse bending as the break in the framing above the upper bottom is an element of transverse weakness, but there is no such discontinuity of strength between the upper deck and the side plating. From this it appears that such signs of straining as those just indicated could not be caused by longitudinal bending alone. When it is understood, however, that longitudinal shearing stress generates equal shearing stress in a transverse direction, the distress frequently observable on the sides well above the bottom and near the neutral axis, and below the upper decks, in ships having great longitudinal strength, may not be so difficult to explain. The late Prof. Jenkins pointed out that in the case of a body subject to bending moment as well as to shearing stress, the distribution of shearing stress differs materially from that in the case of a body subject to shearing stress only. In this he is in accord with Rankine, who showed that a shearing stress, when combined with a bending stress, is not uniform over the section, but is greatest at the neutral plane and least at the top and bottom. The excess of the maximum shearing stress over the mean depends upon the arrangement of the material in the section. On the contrary, the longitudinal bending moment is a maximum at the top and bottom and nil at the neutral axis. If the truth of these statements requires confirmation, such may be found in the fact that in steel shafts, disintegration begins at the center, and gradually spreads until it reaches the surface, when fracture occurs without warning. Of course it will not be assumed from this that the structure of a floating body is free from stress along the neutral plane, for such cannot be the case, as besides a vertical longitudinal, there is also a horizontal transverse bending moment, which produces maximum stresses at the longitudinal neutral plane. But of more importance than this is the stress due to shearing moment, which, as I have said, is maximum where stress due to longitudinal bending moment is nil. In addition, the force of the waves has to be resisted at all parts of the external surface of the hull.

Sir William Fairbairn established the practice of the mathematical investigation into the strength of a ship considered as a hollow girder so far as longitudinal bending moment is concerned. The principle is the same as that by which the strength of a beam may be calculated.

It follows, therefore, that the sum of the products of the small elements composing the section of a ship, such as keel plates, stringer plates and the effective area of steel hatches, multiplied by the squares of their respective distances from the neutral axis, will constitute the moment of strength of the entire section. The principles generally governing the strength of beams or girders enable us to compare the relative importance of any assemblage of plates and bars such as are commonly selected to form the structure of a modern steel ship.

Although the Niagara Paper Co. handled an immense amount of pulpwood last season, a much greater quantity will be brought down the present season. The following have been chartered in this trade: Canisteo and consorts A. Stewart, S. B. Pomeroy, and W. B. Ogden; City of New York and consorts William Grandy, Golden Rule and E. C. Roberts; D. Leuty and consorts W. K. Moore and R. Botsford; St. Louis and consorts Champion and Donaldson. The new steamer building at Wheeler's for the company will also be put in for a trip or two.



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THE MARINE RECORD PUBLISHING CO.,

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CLEVELAND, O., MAY 13, 1897.

The poor rate of freight on coal from Ohio ports to the head of the lakes or Lake Michigan ought to make owners feel like tying up their vessels. The figure of 20 cents and 25 cents per ton f. o. b. cannot begin to pay ordinary disbursements for the trip, and shipowners ought to get together and hold up a fair living rate.

It would on the face of it seem to be a good thing placing the surfmen at life saving stations under the civil service rules, yet care should be taken to give the keeper full control of his crew under all circumstances. There may be a slight danger of overstepping this limit if the men consider that they cannot be discharged or suspended by the keeper until a long drawn out inquiry is held. We believe that the keeper of the station should have all the authority of the master of a ship, otherwise, discipline will not be observed.

One of the most important railway transportation deals ever consummated in the northwest is announced by the Wisconsin Central. By the contracts made it is able to offer the only route from St. Paul and Minneapolis to Liverpool, London, Hamburg, Rotterdam and all other important European ports, with through bills of lading. The advantage of issuing through bills of lading from the initial point of shipment to a European destination is something that has long been vainly sought for by the Minneapolis and St. Paul millers and other exporters. The fact that the Chesapeake & Ohio road operates its own line of steamers from Newport News to European ports has made the establishment of this line possible. The only other line in America owning a steamship line to Europe is the Pennsylvania Co., which is known to be very cautious and backward about making too close alliances with western roads. This being the case, it is probable that the Wisconsin Central will long enjoy the benefits it has earned by the inauguration of the first line of the kind in the history of railroading in the northwest. The negotiations for the establishment of this line were carried on by the general freight agent of the Wisconsin Central, and it is due to his efforts that the deal has been brought to a successful termination. In this connection it may be mentioned that the Canadian Pacific and the South Shore have been perfecting a scheme during the summer as well as the winter, which will no doubt be beneficial to the head of the lakes millers. They expect to put a boat line between St. Ignace and Owen Sound on Georgian Bay. They are making a strong bid for the through freight traffic of the head of the lakes both east and west, and a big slash in through rates is looked for.

A DEPARTMENT OF TRADE.

There is said to be a prospect that a new cabinet position will be created during the present Administration by the addition of a Department of Commerce and Manufactures to those already existing. While as a general thing the creation of new offices should not be encouraged there seems good reason for a consolidation of existing bureaus into such a department as is proposed.

It is intended to include, by transfer from the Treasury Department, such bureaus as the Life Saving Service, Lighthouse Board, Marine Hospital Service, Steamboat Inspection and Navigation Bureaus, United States Coast and Geodetic Survey and Bureau of Statistics, none of which have any logical connection with the national finances. It is also intended to transfer from the Department of State the Bureau of Consular Service and the Bureau of Statistics, the latter to be consolidated with the bureau of the same name from the Treasury Department. Although a part of the diplomatic establishment, it is claimed that the consular service relates wholly to commercial subjects and should be classified with the other bureaus named.

It is believed that a Secretary of Commerce and Manufactures would greatly relieve the Secretary of the Treasury, who is now burdened with a mass of detail work. The last Department established was that of Agriculture and it cannot be said that anything it has ever done has established its usefulness. But the work of a Department of Commerce and Manufactures seems already to be mapped out for it and it might prove to have a larger field.

ACCUMULATIONS OF METALLIC DEPOSITS.

No less a scientist than Prof. Nordeksjold, the Swedish savant, has been endeavoring to prove by experiments, a means of settling the question of the earth's increase in volume, and equatorial diameter. The result from a number of tests on snow made in the north of Europe, goes to show that quantities of iron are found after the snow has been melted. Another point in favor of the earth's accumulation of foreign matter is based upon the showers of meteoric substances, etc. As a matter of fact, opposed to theory, we can hardly imagine the professor's logic weighty enough to be taken on board while latitude and longitude are positive measures, and it will be a question in the minds of many, whether there is not a counteracting waste going on in the economy of this universe to compensate for the additional weight of a few meteors which may occasionally land on this planet.

In this connection it may be worthy of notice to mention the general absence of meteoric showers, or meteorites falling in thickly populated districts. Nor are there any well authenticated records of mariners meeting the phenomena on the wide expanse of waters; while we do not remember a single instance where any large boulders in the shape of meteorites, or aerolites have deposited their burden on the chain of lakes. Hence, it may be argued that the extension of the earth's geography from this cause, is extremely problematical, while on the other hand it is just possible that matter is sent forth into space from this earth, and deposited in the form of aerolites on other worlds. However, be this as it may, twenty centuries have made but little, if any, change in the geographical divisions of this sphere, and it is a long winded study to look for cause in the absence of effect.

The volume of freight handled on the lakes grows larger year by year. In fact, the expansion has been very rapid. The lower rates, which now rule are the result, first of a reduction of railway freight rates during the season of navigation, and second, of a large increase in vessel tonnage, introducing more active competition for the business handled by water. The lake traffic largely affects the commerce of states which contain half the total population of the United States, and its competition with the railways has caused an enormous saving. This saving is not only on freight actually carried by water, but on that moved by the railroad systems with which the water route competes. The vessel interests of the great lakes are thus entitled to all possible consideration on the part of the people and of the government, for on their prosperity depends an annual saving of millions to the farmers of the West on grain moved to the seaboard, and to all who are interested, as producers, sellers and consumers of other freight in which the lake lines are concerned.

ORE CONTRACTS.

The Illinois Steel Co. has closed all contracts for this season's supply of iron ore, according to authentic reports. The purchases amount to 1,000,000 tons, in addition to 300,000 tons not delivered on last year's contracts, making 1,300,000 tons in all.

All of the ore will come from Marquette, Menominee and Mesaba ranges. There will be no Vermillion or Gogebic ore. The Minnesota Iron Co. will ship 600,000 tons, but it will be Mesaba ore. The Norrie mine, it is said, relies on the Illinois Steel Co. to be one of its best customers, but not a pound of Norrie ore has been purchased. The Norrie has now put its men on half time and is curtailing its output. This is regarded as confirming the report of the Illinois Steel Co.'s purchases.

The Pioneer mine at Ely, although it has closed operations probably for the season, will nevertheless ship 200,000 tons of ore this year. The Pioneer is a member of the recognized ore pool and it has been allotted 200,000 tons. Last year the mine did not ship its full allotment, and consequently it can, under the agreement, ship not only what is failed to ship of last year's allotment.

There are but two mines on the Mesaba range shipping ore to the docks in Duluth, the Mountain Iron and Oliver. All of the Consolidated mines have closed down, the Adams being the last to quit. Mining will not be resumed in any of them until the furnaces have used up much of the heavy stock in hand at the opening of navigation this year.

A NEW TRANSPORTATION LINE.

The following circular, just issued, indicates a large increase of business for the Great Lakes line:

Announcement is hereby made of the formation of a line for the transportation of freight between St. Paul, Minneapolis, Minnesota Transfer and Newport News, Va., via Manitowoc, Great Lakes Steamship Co., Cleveland; Cleveland, Cincinnati, Chicago & St. Louis Railway and Chesapeake & Ohio Railway.

At Newport News connection is made with the Chesapeake & Ohio Steamship Co. (limited), to Liverpool and London. Also with the United States Shipping Co. to Hamburg, Rotterdam, Amsterdam, Glasgow, Dublin, Belfast, Antwerp, Leith and Bristol. Through bills of lading will be issued to these and other important points in Great Britain and the continent.

The attention of shippers is respectfully invited to the advantages offered by this line, and the hope expressed that it will meet with encouragement. At the close of navigation the line will be continued by substituting the break-bulk and car ferry service from Manitowoc in connection with the Flint & Pere Marquette and Ann Arbor railways, connecting with the Cleveland, Cincinnati, Chicago & St. Louis Railway via Toledo.

TRAFFIC ASSOCIATION.

Arrangements have nearly been completed between the Flint & Pere Marquette Railroad and the Western Traffic Association whereby the former will handle freight from the northwest to the east by its car ferry service across the lake. The agreement is in force now as far as the broken bulk of freight is concerned. At present the car ferry connects at Manitowoc only with the Wisconsin Central Road. By the new arrangement the northwestern road, which is the only other line entering Manitowoc, will also turn its cars over to the Flint & Pere Marquette.

The only thing that prevents the perfection of the plan is the question of rates, which has not as yet been agreed upon. There are three routes between the northwest and the east. The rate by the way of Chicago is the highest and that by way of Mackinaw the lowest. The traffic association wants the rate by the Flint & Pere Marquette to be the same as the lowest, while the latter company has insisted upon a rate above that by way of Mackinaw. It is thought an agreement will soon be reached by which the Flint & Pere Marquette will get all the freight for the East that reaches to Manitowoc.

AIDS TO NAVIGATION.

The sundry civil bill makes the following appropriations for the great lakes outside the regular appropriations to maintain established institutions: Ballard's Reef light vessel and two float lights, \$1,500; Grand Marais, light and bell, \$2,000; Chequamegon, point light, Lake Superior, \$1,500; two revenue steamers, \$200,000; surveys and charts, \$27,000; total, \$232,000.

LAUNCH OF THE ANTRIM.

The steel schooner Antrim, built at the yards of the Globe Iron Works Co. for the American Transportation Co., was successfully launched at 11 o'clock last Saturday morning. The christening ceremony was performed by Mrs. Abigail Pratt, daughter of Mr. John F. Pankhurst, vice president and general manager of the Globe Co. The new boat will be completed and ready for business in about two weeks, and will, with the steamers Harper and Nimick and schooner Tyron, carry ore. The principal dimensions of the Antrim are: Length over all 378 feet, length between perpendiculars 366 feet, beam molded 44 feet, depth 25 feet. She will have three masts, and will present a very neat appearance.

Deck houses are of steel, neatly paneled and plastered and large side lights with composition frames have replaced the ordinary windows. The after house is 38 feet long and 22 feet wide and has accommodations for captain, mate, engineer and steward. There is a large dining room 9 feet wide by 22 feet long, and also galley, pantry. The dining room and captain's quarters are neatly finished with hard wood in a system of neat panels. A bathroom and other accommodations are connected with the captain's apartments and the dining room has a large skylight running nearly its whole length, giving it a light and airy appearance.

Boilers and all machinery are located forward and the foremast, which is of steel, alike to the other spars, is used as a smokestack. The pilot house is on the forecastle deck and just aft of the towing machine house. In the boiler room is placed the ballast pump, feed pump and electric plant. On the upper deck is a Globe steam steering engine and Globe steam capstan windlass, as

Minnesota by the Marine Insurance Co. against the steamer Arabian. The action is brought by the company to recover from the steamer some \$20,000 damages paid the Montreal Transportation Co. by the insurance company for injuries sustained in 1891 by their vessel, the Minnedosa, in the Welland Canal, which damages are alleged to have been caused by the fault of the Arabian in negligently running into the lock gate and smashing it down.

TEMPORARY CHANGE OF ROUTES.

Owing to the large amount of ice this year, the different trans-Atlantic steamship companies have directed their steamers to cross the 49th meridian, in lat 41°, westward bound, and lat 40° 10', eastward bound, during the ice season.

J. E. CRAIG,

Commander, U. S. N., Hydrographer.

AGAIN THE PETREL.

Capt. Dunn, of the Dominion Government cruiser Petrel, on Saturday, between Rondeau and Port Stanley, Lake Erie, gave chase to three American vessels found fishing in Canadian waters. The vessels succeeded in escaping, but the Petrel seized seventy-seven nets and about two tons of fish the poachers were compelled to abandon. This illegal fishing business ought to be stopped, if not for any other reason than solely on account of the food supply which the catch gives to the poorer people of the lake cities.

RATES RESTORED.

The lake lines who have been cutting rates on west-bound freight, billed to Duluth and Minneapolis, have got

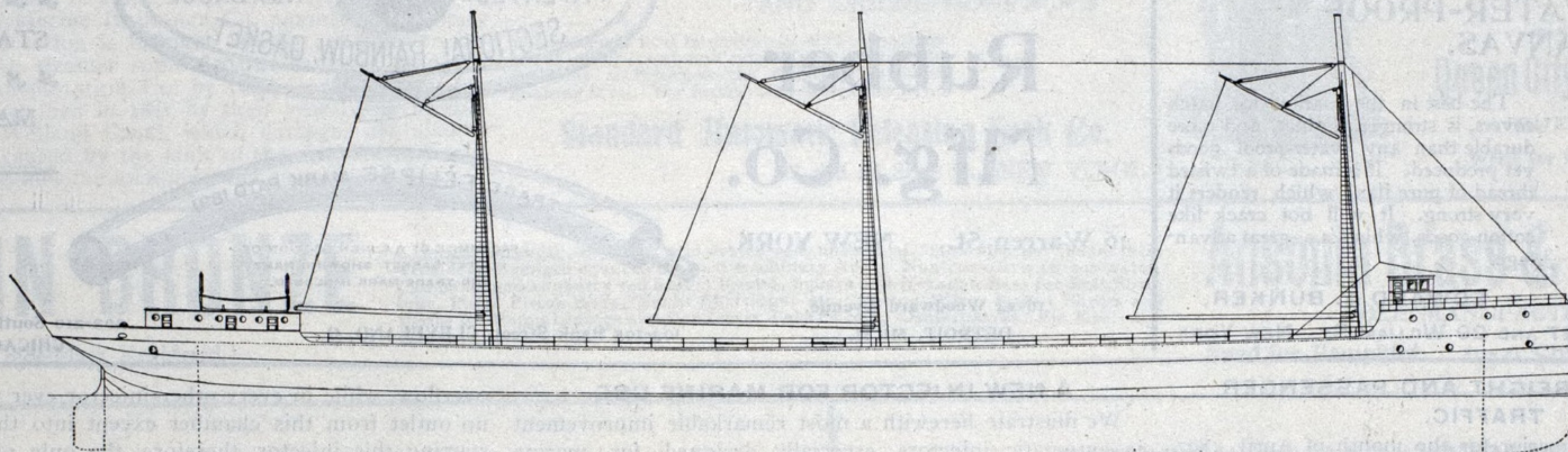
A RECIPROCAL FEELING.

Sir Donald Smith, the Canadian high commissioner, in an interview with a representative of the Associated Press this week, said he was hopeful that fast steamships between Canada and Great Britain would be running within two years.

In regard to the tariff propositions submitted to the parliament at Ottawa, it was nothing but the accentuation of Canada's attachment to Great Britain with which country she desires the closest possible commercial relations. Certainly, he added, it was prompted by no feeling of hostility to the United States, with which country Canada is eager for real reciprocity.

EASTERN FREIGHT REPORT.

Messrs. Funch, Edye & Co., New York, report as follows: The demand of "shorts" for May has been fairly met, and, whilst there is some enquiry for tonnage to afford June loading, no demand exists for the following months until September is reached, for which month a few fixtures have been effected at 3d@6d advance over rates current for May, and we can besides report some inquiry for September-October unfilled because of insufficiency of limit. The demand for timber tonnage from the Gulf remains active and rates well maintained. This trade steadily drifting into steam from sail. Deal freights, on the other hand, show a declining tendency under very liberal offering of tonnage. Shippers of case oil by steam to the Far East find no difficulty in securing tonnage on easier terms, whilst boats to load in that direction on the berth continue to be held at figures considerably in excess of charterers' views. Owing to the probable delay in the application of new tariff rates,

**NEW STEEL SCHOONER ANTRIM.**

Built by the Globe Iron Works Co., Cleveland, for the American Transportation Co., and launched on Saturday, May 8th.

well as a steam towing machine, made by the American Ship Windlass Co., Providence, R. I. There are three anchors of the Baldt type, two of 3,500 pounds each, and a kedge anchor carried aft of 1,200 pounds.

TO RAISE THE CAYUGA.

The tug Protector has taken from Chicago this week four steel pontoons. Capt. Reid is confident that when these in addition to the four which were sunk last year are made fast and filled with air the large steamer Cayuga can be raised. This steamer was formerly owned by the Lehigh Valley Line and was built at Cleveland, but sunk several seasons ago in the north end of Lake Michigan through collision. The pontoons are built of one-half inch steel plates, and measure 31 feet in length by thirteen feet in diameter. They are slightly conical on the ends and are heavily braced within by angle irons and cross timbers. There are four others, slightly smaller, now fastened to the Cayuga, having been placed there last fall. It is thought that with all eight there is a combination lifting power of 1,500 tons at least. In addition the water bottom of the Cayuga is to be filled with air and the boilers are to be utilized in a similar manner. If the Cayuga is raised in this manner, it will be one of the most wonderful wrecking jobs ever heard of. The steamer lies on her side in 106 feet of water, which makes it very difficult for divers to work.

ACTION FOR DAMAGES.

Charles Kramer of Chicago and H. D. Goulder of Cleveland, two leading marine lawyers of the United States, were in Kingston this week taking the evidence of several witnesses in a suit in the District Court of

together again and have agreed to stand by the official rates in future. The Northern Steamship company and the Western Transit Co., both of which forced this action by issuing tariffs with an open 10-cent cut, have rescinded their action and restored old west-bound rates.

FOR DREDGING AT GREEN BAY.

Capt. George A. Zinn, United States engineer, opened bids this week for dredging about 50,000 cubic yards of material at Green Bay, in Fox river below Depere. They were as follows; John Smith, Manistee, Mich., 10 cents per cubic yard; Green Bay Dredge and Piledriver Co., Green Bay, Wis., 10 cents; Eggers & Simond, Two Rivers, Wis., 10 cents; William A. Starke, Milwaukee, Wis., 10 cents; Chicago Dredging and Dock Co., Chicago, Ill., 12½ cents; Arthur H. Vogel, Milwaukee, Wis., 9½ cents; Racine Dredging Co., Racine, Wis., 10½ cents.

Arthur H. Vogel, the lowest bidder, represents the Sheboygan Dredge and Dock Co.

SLOW DOWN.

Because of the recent race between the Langell and Elfin-Mere through the canal, the city council of Duluth, on Tuesday, passed an ordinance restricting the speed of vessels to six miles an hour through the canal, and some restrictions were put on vessels of over 500 tons in the harbor. The canal, so-called, is actually the entrance to the harbor, and is simply going through the piers to reach a dock. If the masters of the Elfin-Mere and Langell had not bungled in their attempt to get to a dock the local inspectors would have had no business to interrogate or question them. As it now appears, they were both to blame and in a very slovenly manner.

the demand for time boats for sugar up from the West Indies has again revived and a few charters have been effected.

We can report no change in the market for sail vessels. Tonnage on spot remains scarce, and offerings to arrive are not plentiful; on the other hand the demand is limited and not very pressing. Rates about hold their own, and, according to present appearances, no change is likely to occur for some time to come.

RATES FOR HANDLING LUMBER.

The following rates for handling lumber at Tonawanda during the present season have been agreed upon: The rate for unloading pine or Norway lumber from barges and steamers of 12½ feet in depth of hold or less, government register, is 22 cents per 1,000 feet from the opening of navigation to October 1. After that date the rate shall be 24 cents per 1,000. Other rates are: Birch, maple and ash, 35 cents; oak, 40c.; basswood, 24c.; elm, 26c.; hemlock, 25c.; bill timber, 30c., 35c. and 40c.; round cedar posts, 7c. each; split posts, ½c. each; cedar railroad ties, 1½c. each.

PATENT RELEASING HOOK.

The Standard Automatic Releasing Hook Co., New York, have just received orders to fit out the Goodrich Line steamers Iowa and Virginia and it is expected that other boats of the fleet will be fitted later. The Chicago Ship Building Co. have also ordered sets of this excellent hook and it is reported that Manager Babcock thinks very highly of this automatic releasing device for boats davit tackles.

H. C. BURRELL, Marine Reporter.

We can Supply Men and Officers to Passing Vessels

Boat on the river
at all hours, night
or day.

Signal: One long
two short.

Our boats are
white. We'll treat
you white and deal
with you



ON THE SQUARE.

OFFICE:
FOOT WOODWARD AVENUE,
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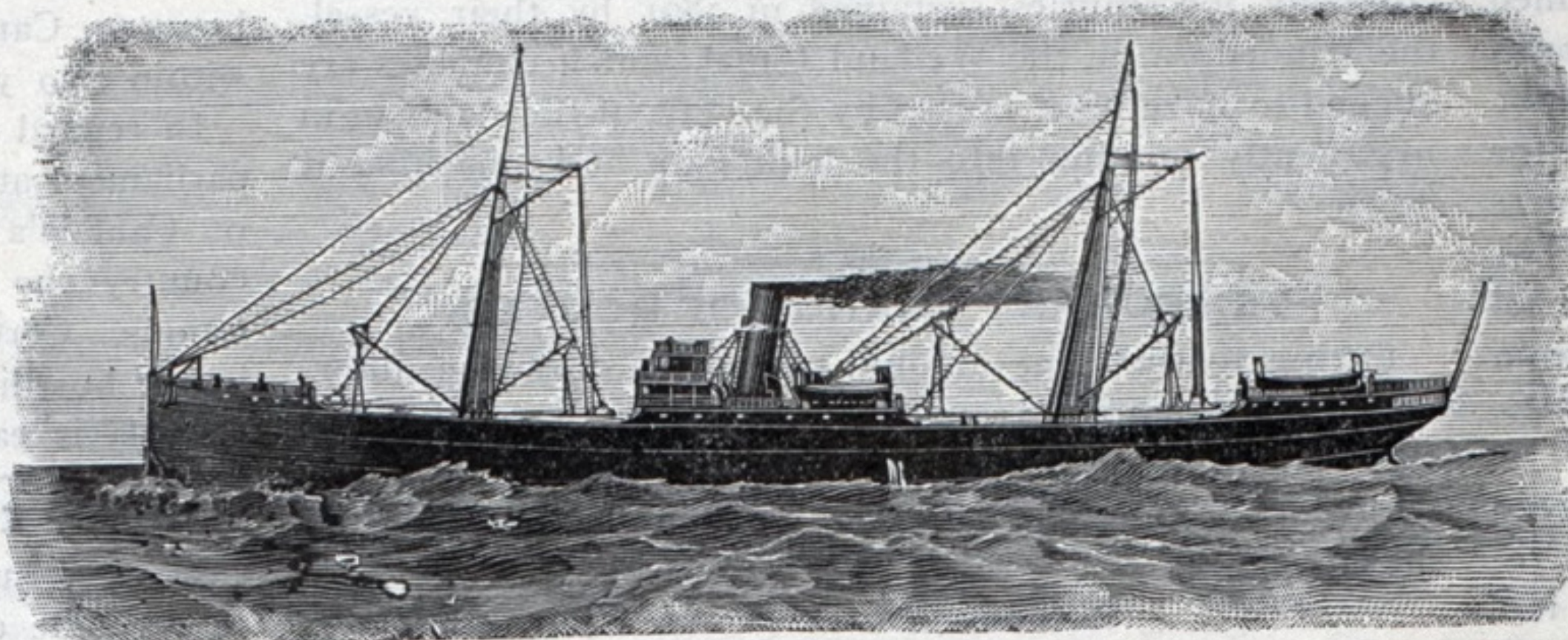
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FOR LAKE OR OCEAN SERVICE.

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MATCHLESS
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UNION
STAND HOLES
AND
MAN HOLES

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202-210 South Water Street,
CHICAGO, ILL.

REPORT OF FREIGHT AND PASSENGER TRAFFIC.

To and from Lake Superior for the month of April, 1897,
including statistics of the United States and Canadian
Canals, at Sault Ste Marie, Michigan and Ontario.

EASTBOUND.

ITEMS.	U. S. Canal.	Canadian Canal.	Total.
Copper, net tons	4,837	.....	4,837
Grain, bushels	1,246,500	.....	1,246,500
Building stone, net tons .....	.....	.....	.....
Flour, barrels	161,390	.....	161,390
Iron ore, net tons	2,745	.....	2,745
Iron, pig .....	.....	.....	.....
Lumber, M. ft. B. M.	2,110	.....	2,110
Silver ore, net tons .....	.....	.....	.....
Wheat, bushels	2,240,271	37,300	2,277,571
Unclassified freight, net tons	334	.....	334
Passengers, number	15	.....	15

WESTBOUND.

ITEMS.	U. S. Canal.	Canadian Canal.	Total.
Coal (hard), net tons	12,496	4,400	16,896
Coal (soft), net tons	44,974	4,400	49,374
Flour, barrels .....	.....	.....	.....
Grain, bushels .....	.....	.....	.....
Manufactured iron, net tons	1,403	.....	1,403
Salt, barrels	12,400	.....	12,400
Unclassified freight, net tons	7,895	1,281	9,176
Passengers, number	16	25	41

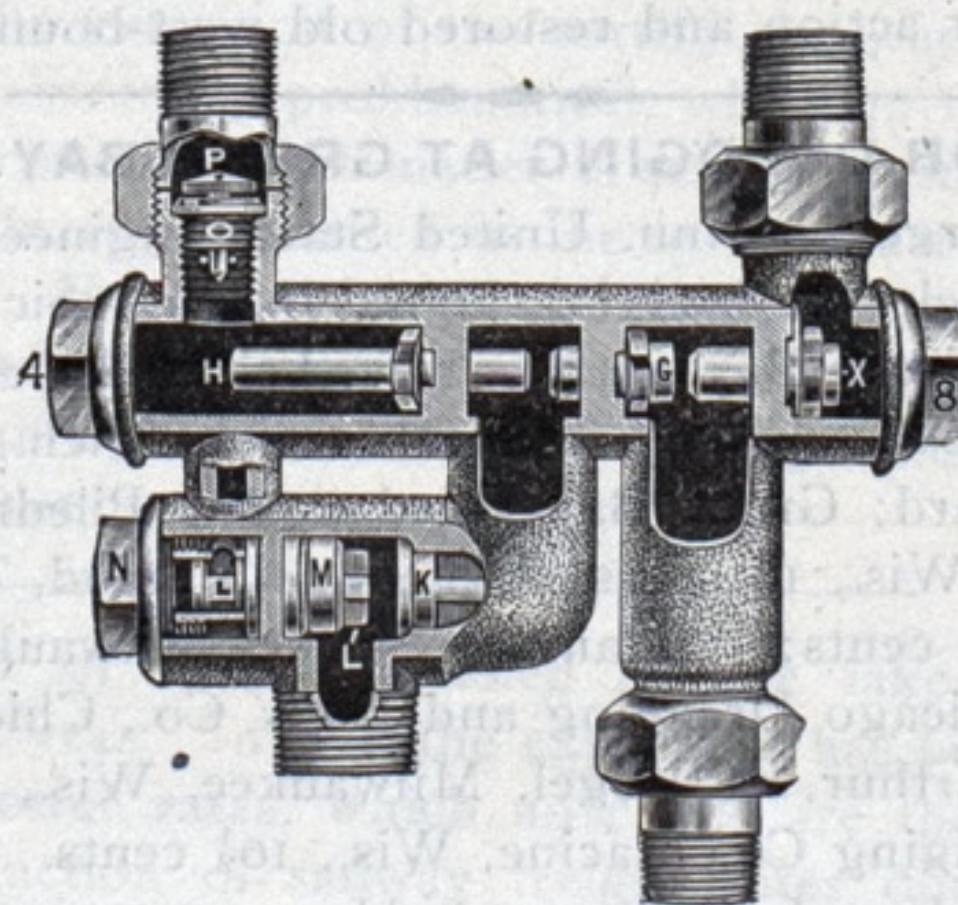
Eastbound freight, net tons	120,794
Westbound freight, net tons	78,709

Total	199,503
Total craft, United States	229
Total craft, Canadian	32
Total registered tonnage, United States	227,634
Total registered tonnage, Canadian	22,065
Total	249,699

A NEW INJECTOR FOR MARINE USE.

We illustrate herewith a most remarkable improvement in automatic injectors, especially designed for marine boilers where it is desired to carry very high steam pressures, or with ordinary steam pressures of 75 pounds to 125 pounds to handle a very hot water supply.

It has always been considered impossible with an automatic injector to obtain a wider working range than from 20 pounds to 25 pounds low pressure up to 145 pounds to 155 pounds high pressure with an ability to handle hot



A NEW INJECTOR.

water at 120 degrees at 60 pounds to 80 pounds steam pressure, and 95 to 100 degrees at 125 pounds' steam pressure. With the improved injector here illustrated, there is obtained a working range of from 15 pounds low pressure to 250 pounds high pressure, and at the same time an ability to handle water at 140 to 145 degrees with 65 pounds to 80 pounds steam; 135 to 140 degrees at 100 pounds steam, and 119 to 122 degrees at 150 pounds steam. A reference to the cut will show that the construction of this injector is entirely different from that of any other injector on the market.

It will be noticed that there is an outlet from the chamber in which the delivery jet H is located, and which is termed the pressure chamber, around the valve L to the

overflow, while in every other injector ever made there is no outlet from this chamber except into the boiler. In starting this injector, therefore, the only pressure to be overcome is the atmospheric pressure, the water passing through the jet H into the pressure chamber, and then out around the valve L, which gradually closes as the current to the boiler is established, this valve being thereafter held to its seat by the full boiler pressure in the pressure chamber referred to, which also acts through this valve upon the valve K, as when both the valves L and K are seated, the end of the valve L comes against the end of the valve K, holding it firmly to its seat by the back pressure from the pressure chamber referred to, thus accomplishing automatically that which in positive injectors requires two or three valves to be operated by the engineer in charge.

This form of construction enables the injector to handle a very hot water supply and still be automatic. This injector is being placed on the market in the United States and Canada by the Penberthy Inspector Co., 128 Seventh street, Detroit, Mich., who have purchased the rights for these two countries from the International Specialty Co., having much improved the construction of the machine over the original form in which it was placed on the market by the International Specialty Co., something over a year ago.

A scheme is proposed to make Cadillac a port town connecting Clam Lakes with the Manistee River, says the Cadillac News and Express. If connected with the big lake, Clam Lake, upon which it is located, would be a magnificent harbor. It is already connected with Twin Lakes, the three forming a chain over six miles in length extending directly west towards Manistee. As near as can be estimated without actual survey, it would require less than thirty miles of canal across the country between Manistee River and Twin Lakes. It is said that should a future candidate enter the field for Congress from the district upon the issue "For the improvement of the Manistee River to Cadillac," he would receive the solid vote, regardless of party affiliations of Wexford and Manistee counties.

VISIBLE SUPPLY OF GRAIN

As compiled for The Marine Record by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY. Bushels.
Albany		15,000	50,000		
Baltimore	325,000	1,301,000	84,000	113,000	
Boston	266,000	765,000	204,000	1,000	
Buffalo	779,000	57,000	383,000	135,000	611,000
Chicago	7,750,000	7,022,000	4,426,000	993,000	57,000
Cincinnati	1,000	2,000	10,000	1,000	4,000
Detroit	90,000	8,000	3,000	42,000	
Duluth and Superior	4,770,000	23,000	1,102,000	453,000	234,000
Indianapolis	37,000	88,000			
Kansas City	196,000	164,000	177,000	6,000	
Milwaukee	286,000	3,000	9,000	437,000	71,000
Minneapolis	12,881,000	65,000	660,000	32,000	2,000
Montreal	544,000	18,000	886,000	60,000	37,000
New York	492,000	2,981,000	1,029,000	268,000	163,000
Oswego	85,000	38,000			22,000
Peoria	2,000	78,000	4,000		25,000
Philadelphia	119,000	16,000	50,000	2,000	
St. Louis	292,000	608,000	51,000		
Toledo	932,000	319,000	24,000	13,000	
Toronto	117,000	457,000	22,000	71,000	
On Canal	96,000		59,000		44,000
On Lakes	1,802,000	69,000	36,000	34,000	35,000
On Mississippi		833,000	1,608,000	492,000	284,000
Grand Total	31,862,000	15,061,000	10,895,000	3,153,000	1,589,000
Corresponding Date 1896	54,000,000	10,337,000	7,852,000	1,555,000	1,112,000

Charles Kramer, of Chicago, and Harvey Goulder, of Cleveland, two leading marine lawyers of the United States, have been in Kingston lately taking the evidence of several witnesses in a suit in the District Court of Minnesota by the Marine Insurance Co. against the steamer Arabian. The action is brought by the company to recover from the steamer some \$20,000 damages paid the Montreal Transportation Co. by the insurance company for injuries sustained in 1891 by their vessel, the Minnedosa, in the Welland Canal, which damages are alleged to have been caused by the fault of the Arabian in negligently running into the lock-gate and smashing it down.

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PROPOSALS.

U. S. Engineer Office, Telephone Building, Detroit, Mich., May 10, 1897: Sealed proposals for improving Detroit River, Mich., by removal of boulders, bed-rock, or other material from Ballard's Reef Channel, will be received here until 12 o'clock noon (standard time), June 1, 1897, and then publicly opened. Information furnished on application. G. J. Lydecker, Lt. Col. Engrs. 19-21

Treasury Department, Office of General Superintendent U. S. Life Saving Service, Washington, D. C., May 7, 1897. Sealed proposals will be received at this office until 2 o'clock p. m., of Thursday, the 3d day of June, 1897, for furnishing supplies required for use of the Life Saving Service for the fiscal year ending June 30, 1898; the supplies to be delivered at such points in New York City, Grand Haven, Mich., and San Francisco, Cal., as may be required, and in the quantities named in the specifications. The supplies needed consist of Beds and Bedding; Blocks and Sheaves; Cordage; Crockery; Furniture;

Hardware; Lamps, Lanterns, etc.; Lumber; Medicines, etc.; Paints, Oils, etc.; Ship Chandlery; Stoves, etc.; Tools, and miscellaneous articles; all of which are enumerated in the specifications attached to the form of bid, etc., which may be obtained upon application to this office, or to the Inspector of Life Saving Stations, 24 State Street, New York City; Superintendent, Eleventh Life Saving District, Grand Haven, Mich.; and Superintendent, Twelfth Life Saving District, New Appraisers' Stores, San Francisco, Cal. Envelopes containing proposals should be addressed to the "General Superintendent, U. S. Life Saving Service, Washington, D. C.," and marked on the outside "Proposal for Annual Supplies." The right is reserved to reject any or all bids, and to waive defects, if deemed for the interests of the Government. S. I. Kimball, General Superintendent. 19-20

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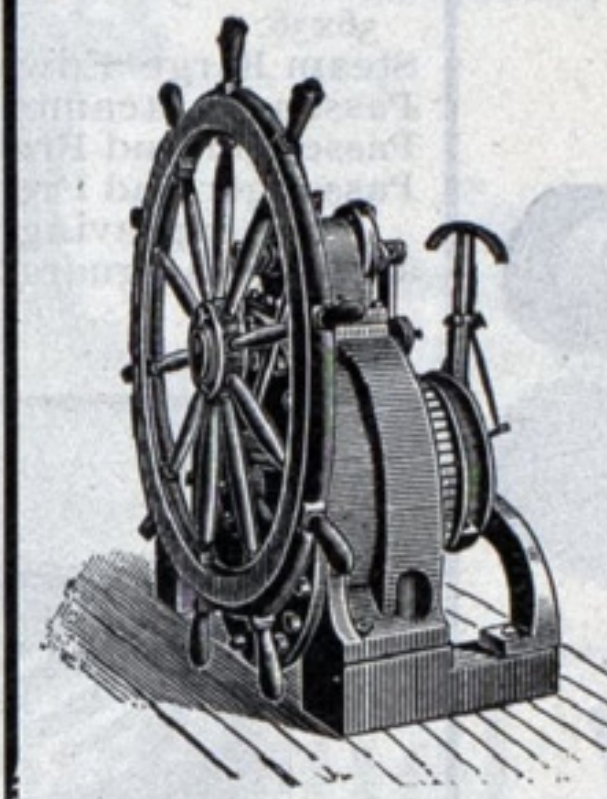
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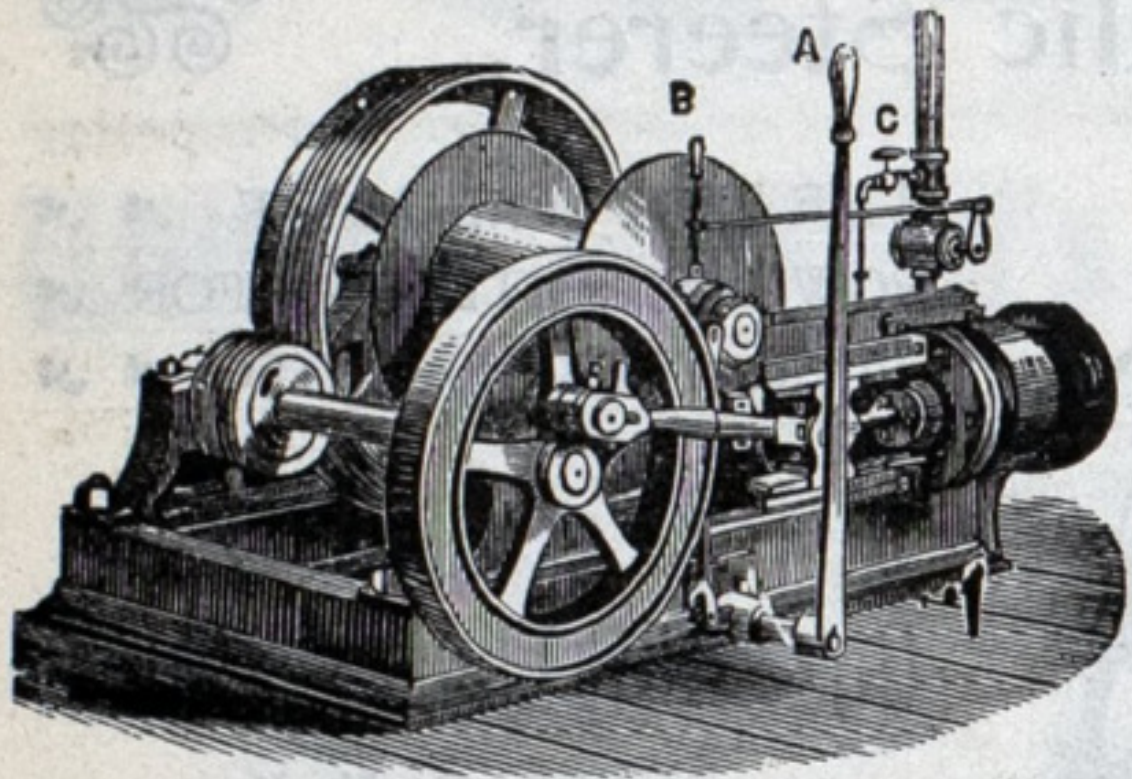
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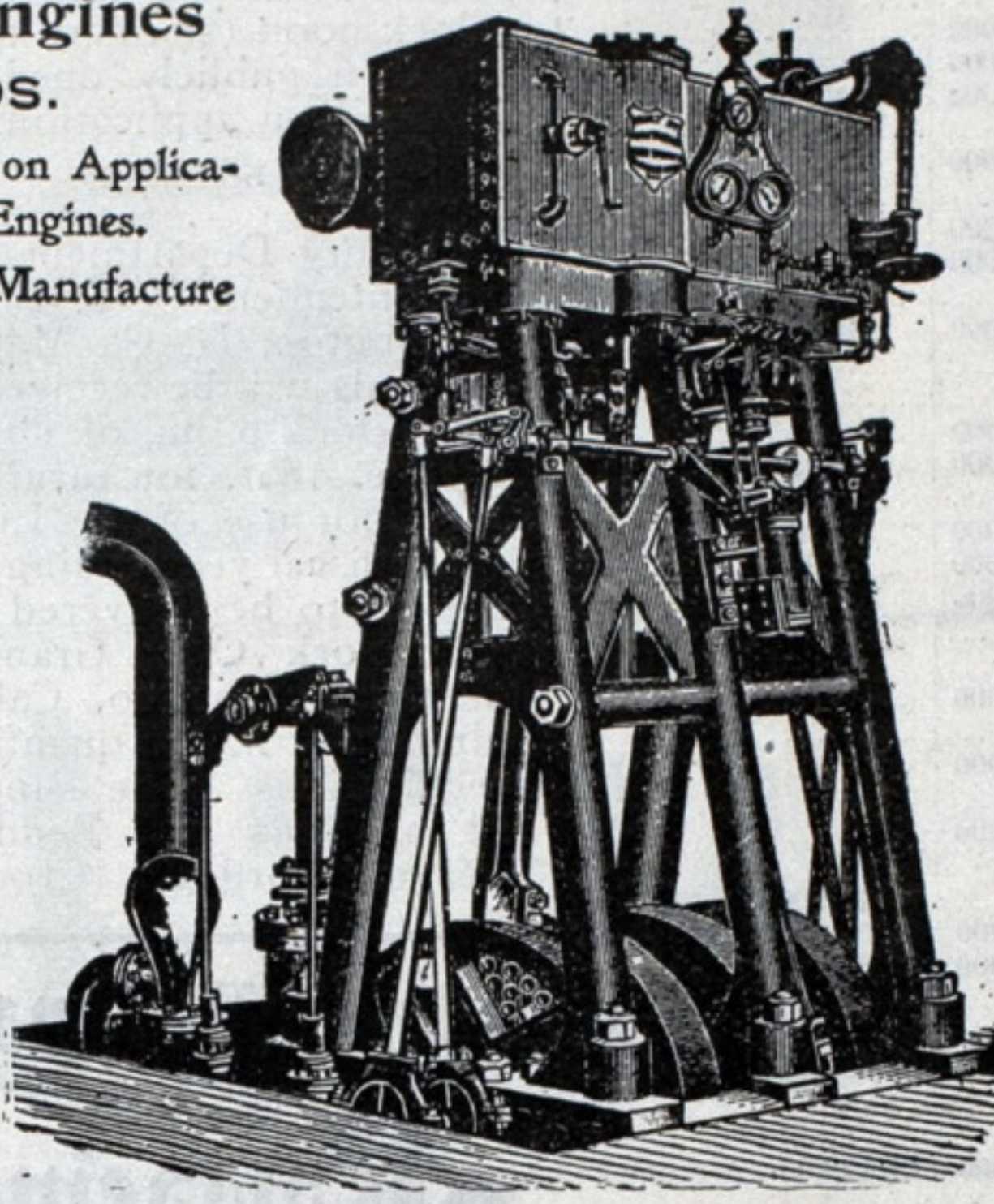
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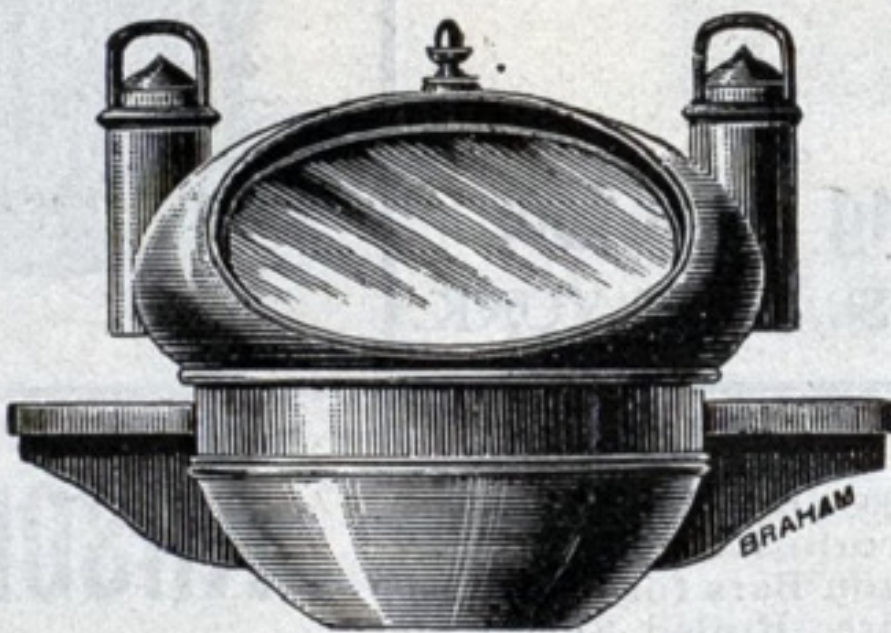
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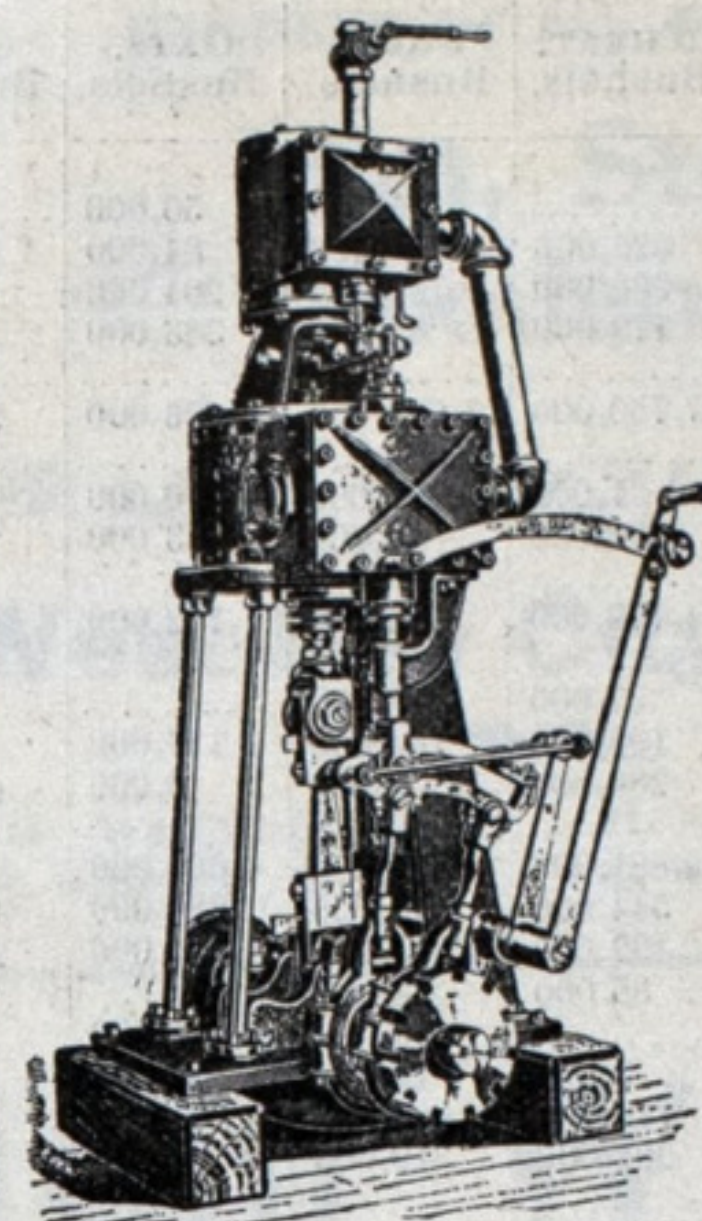
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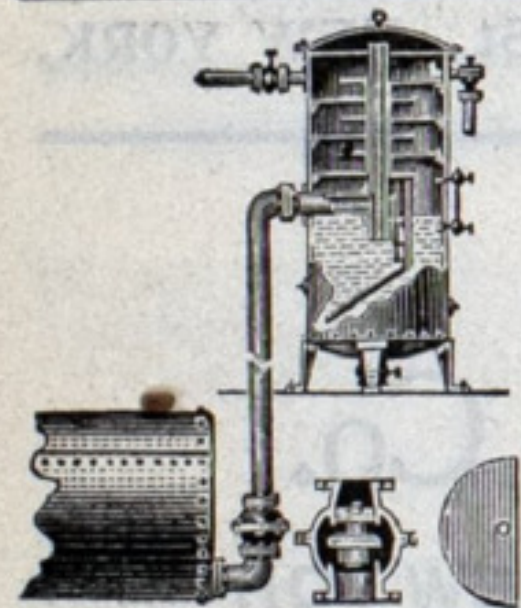
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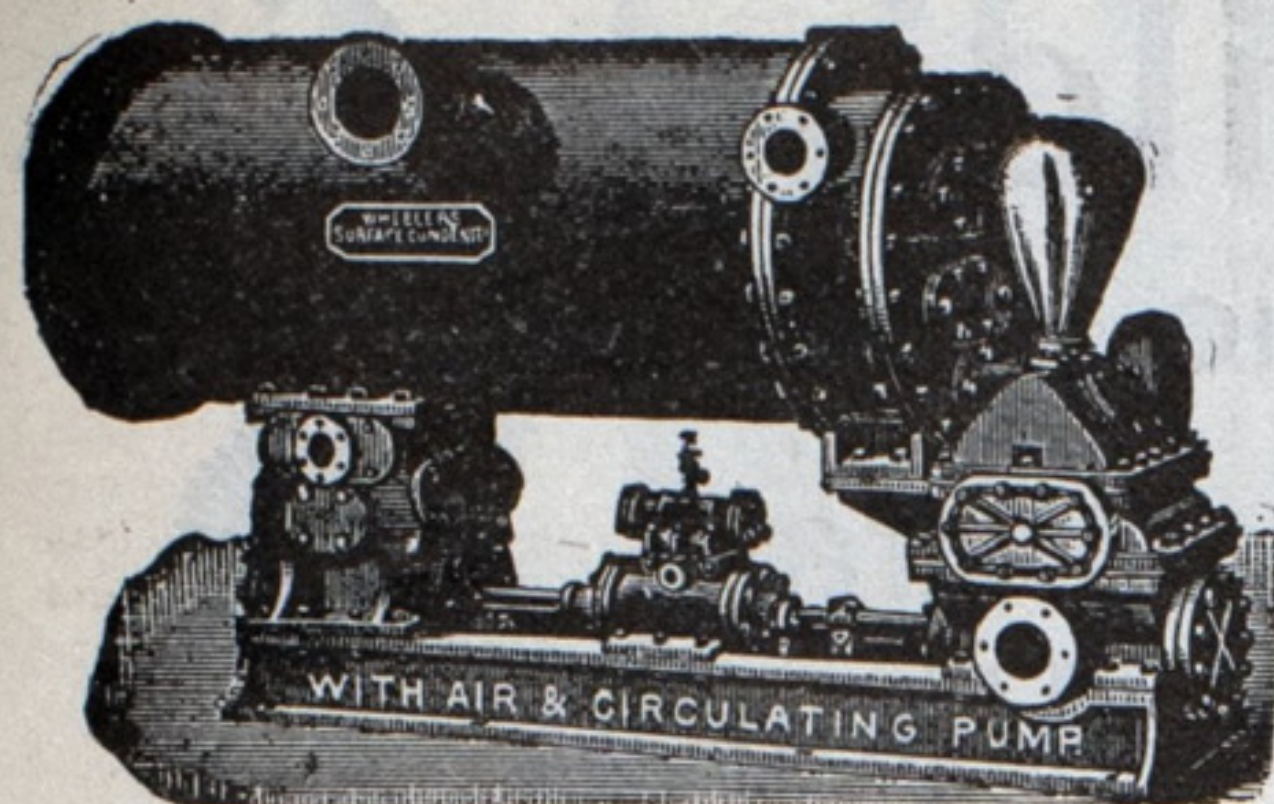
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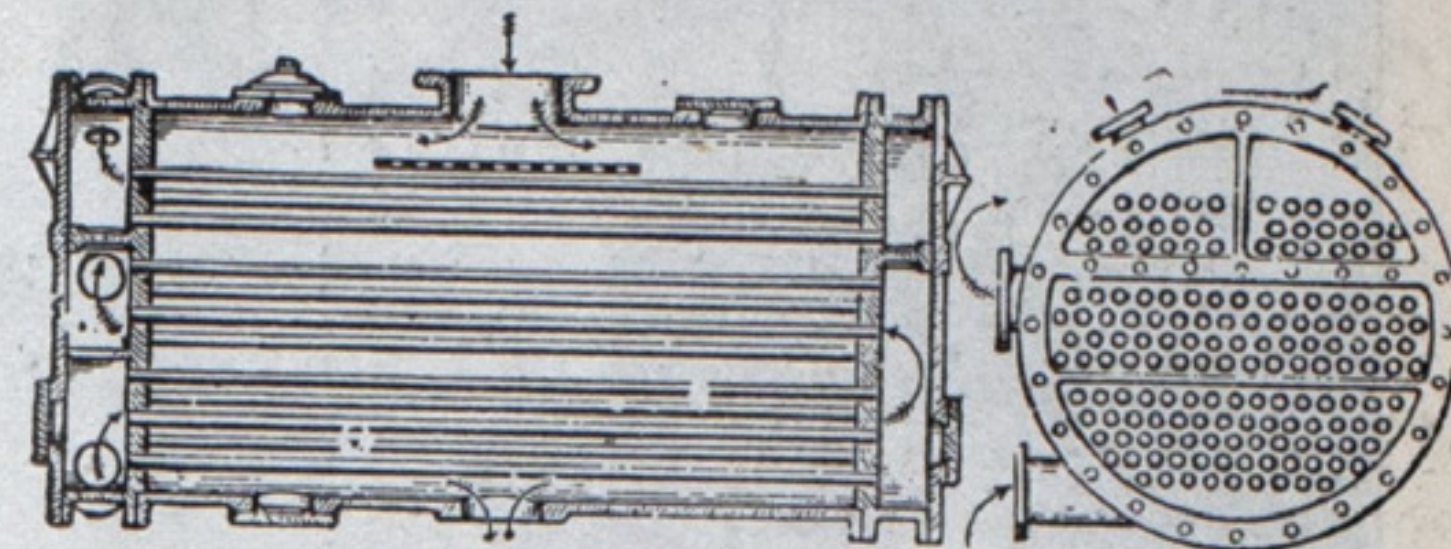
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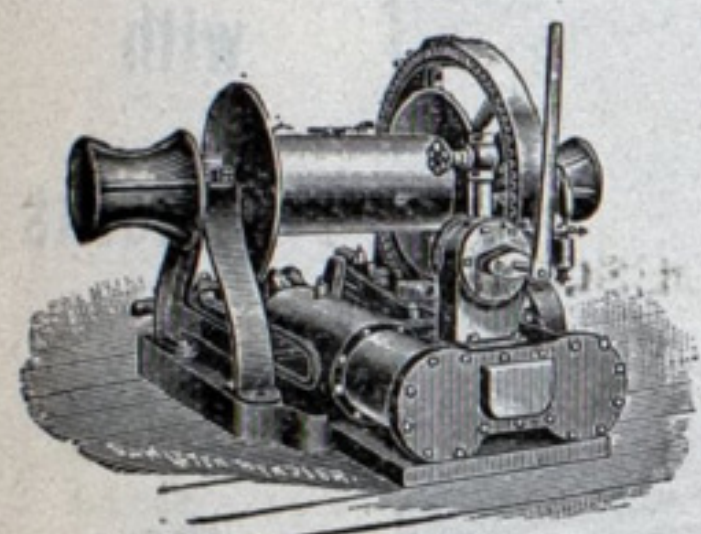
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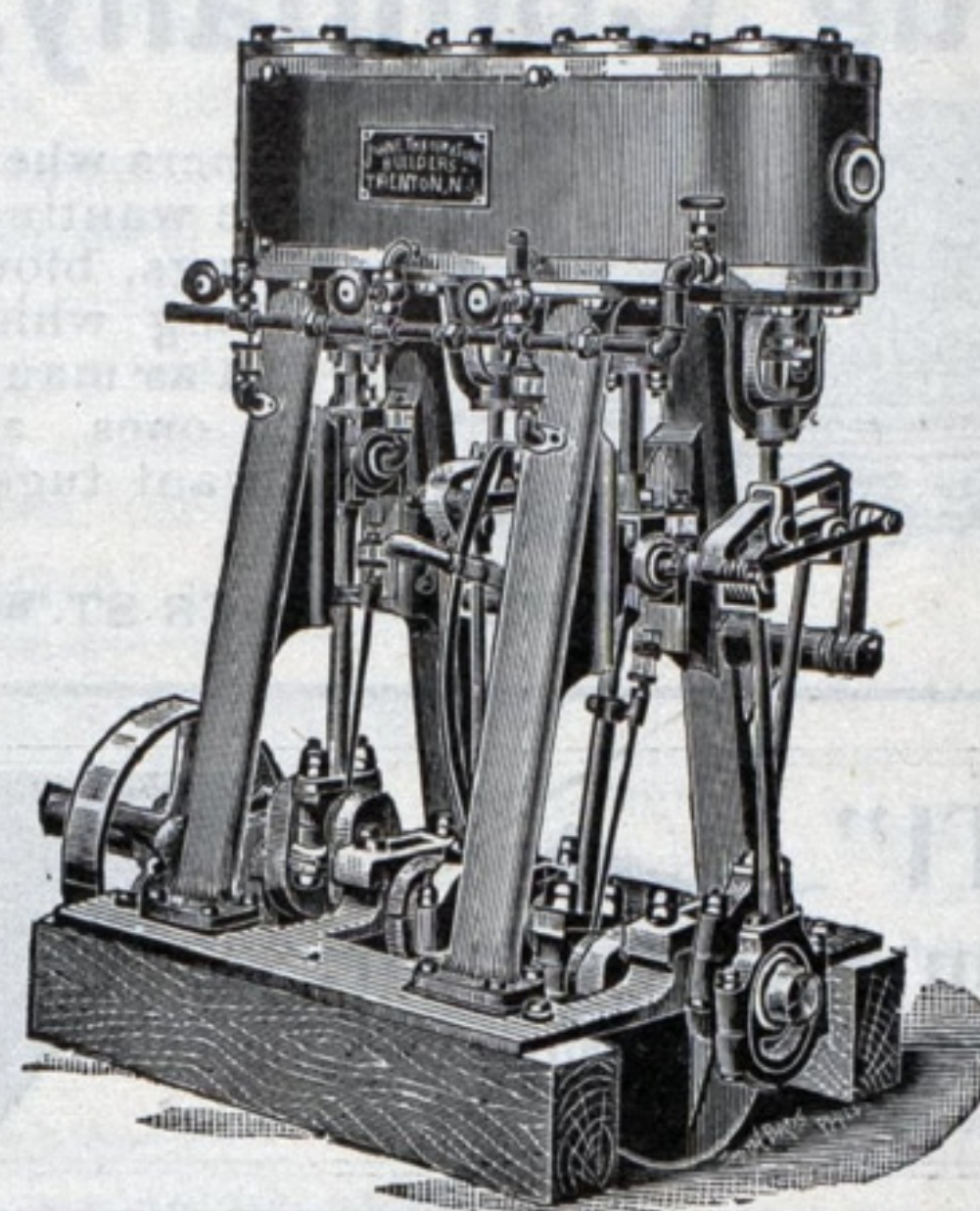
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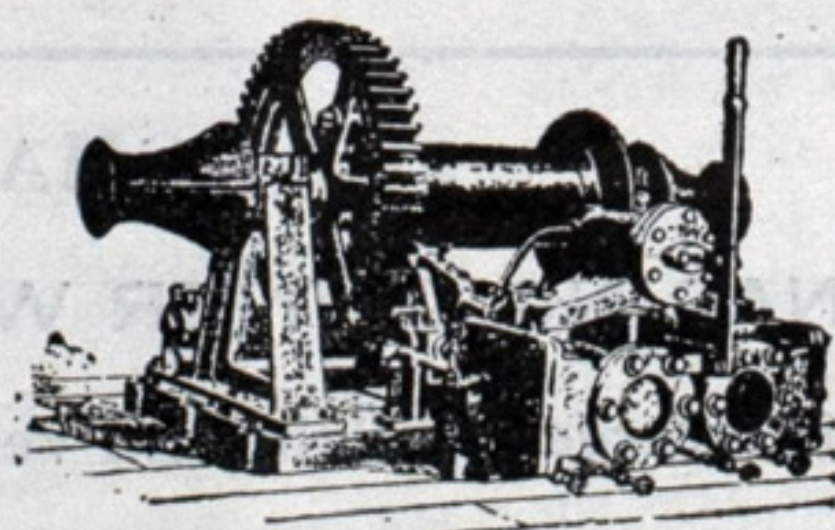
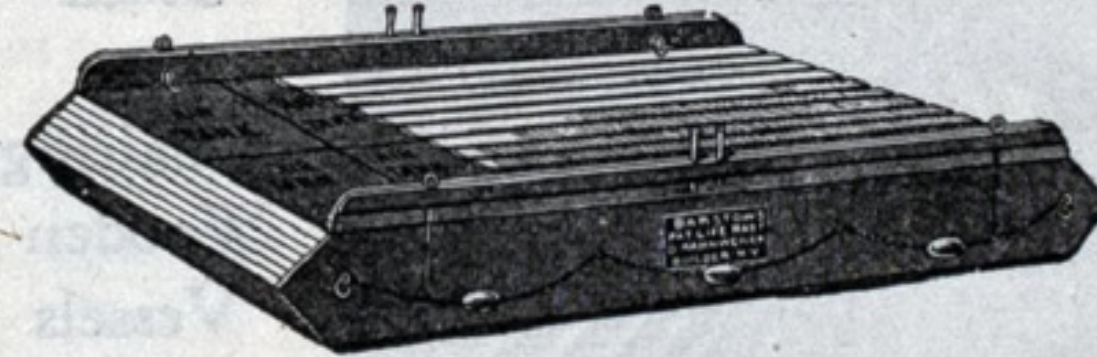
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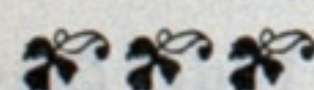
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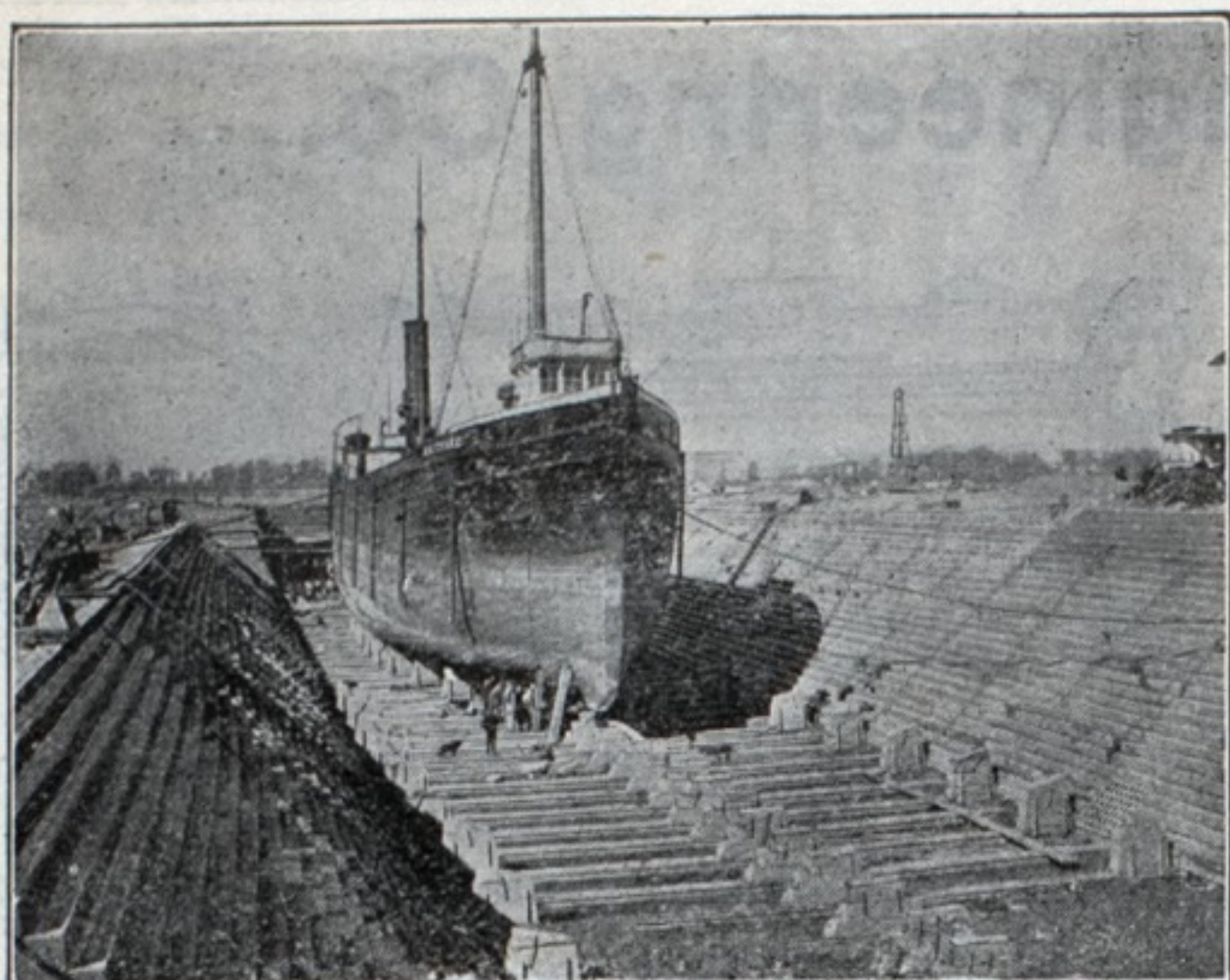
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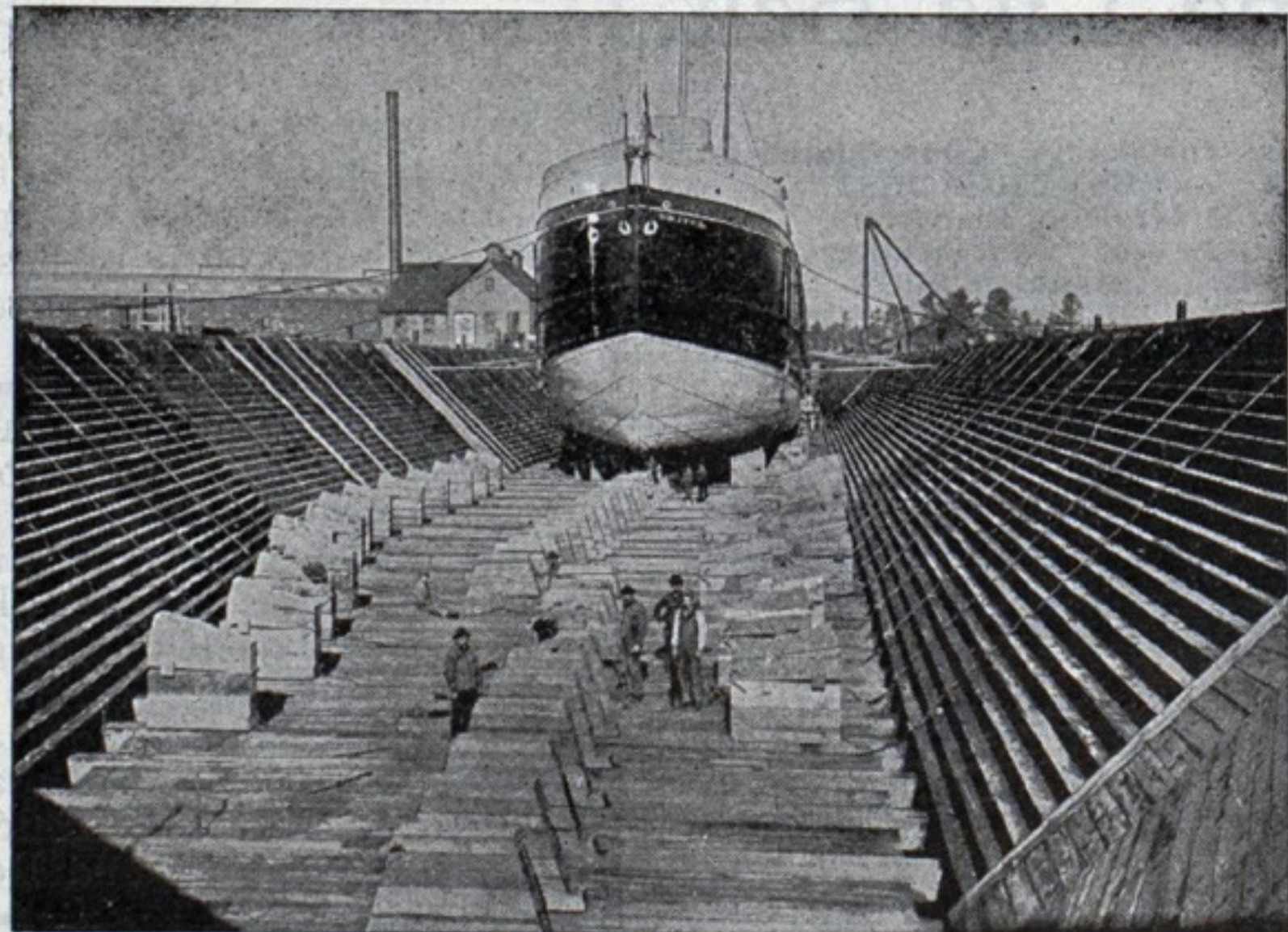
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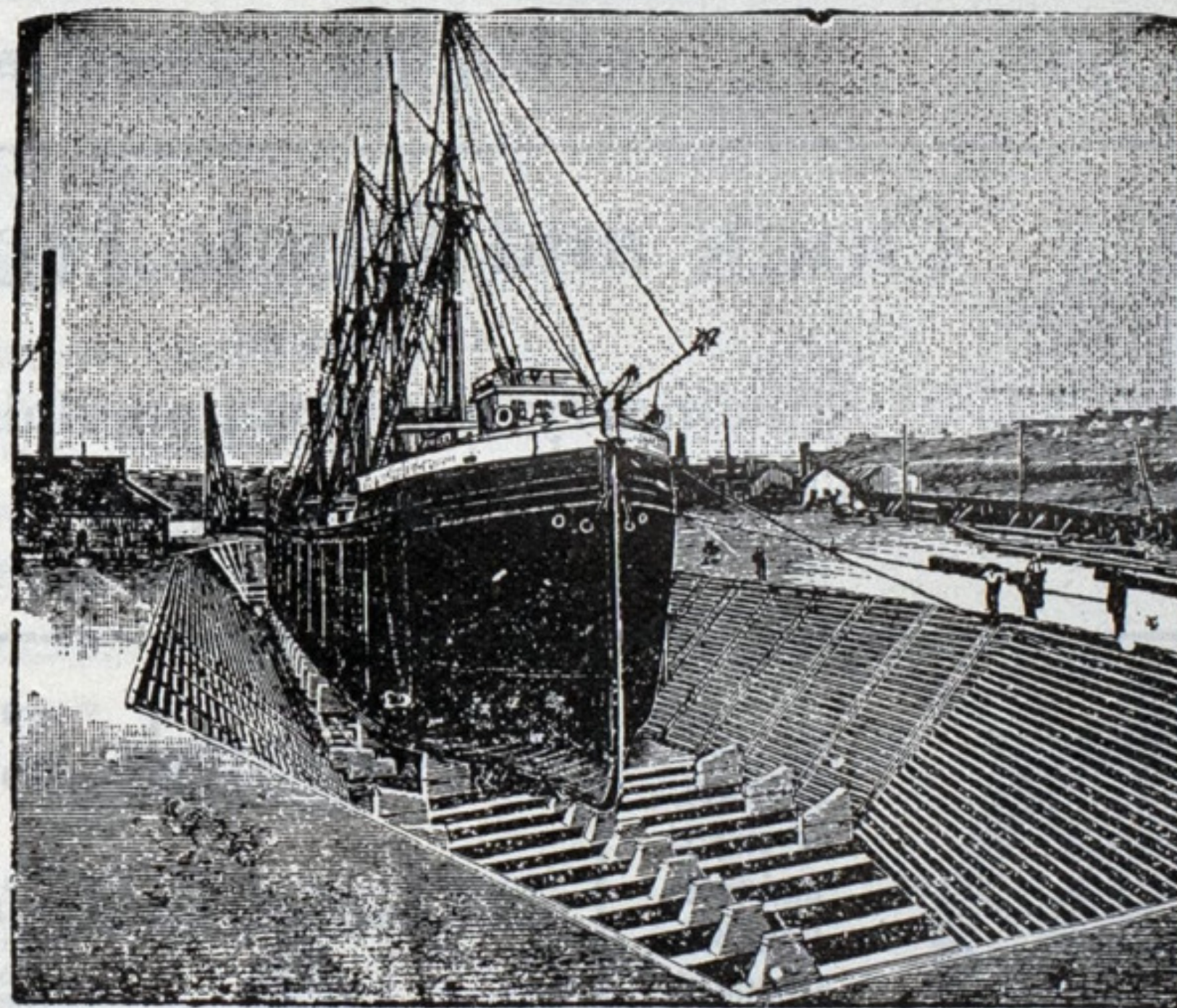
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